

Thar Institute of Engineering Sciences and Technology
A Constituent College of NED University of Engineering & Technology

Department of Computer Science & Information Technology
Bachelor of Science in Computer Science

Course Profiles

Scheme of Studies

Computer Science

FIRST YEAR

Fall Semester			Spring Semester		
Course Code	Course Title	Credit Hours Th Pr Total	Course Code	Course Title	Credit Hours Th Pr Total
CT-175	Programming Fundamentals	3 1 4	CS-251	Logic Design & Switching Theory	3 1 4
CT-174	Fundamentals of Information Technology	2 1 3	CT-162	Discrete Structures	3 0 3
PH-122	Applied Physics	3 1 4	CT-251	Object Oriented Programming	3 1 4
HS-104	Functional English	3 0 3	HS-115	Academic Reading and Writing	3 0 3
HS-105	Pakistan Studies OR	2 0 2	HSK-1	Chinese Language OR	- - NC
HS-127	Pakistan Studies (for Foreigners)	- - NC	HS-231	Turkish Language-I	- - NC
MT-001	Mathematics - 1 (for Pre-Medical)	- - NC	MT-171	Differential & Integral Calculus	3 0 3
			MT-002	Mathematics - 2 (for Pre-Medical)	- - NC

SECOND YEAR

Fall Semester			Spring Semester		
Course Code	Course Title	Credit Hours Th Pr Total	Course Code	Course Title	Credit Hours Th Pr Total
CT-157	Data Structure Algorithms & Applications	3 1 4	CS-252	Computer Architecture & Organisation	3 1 4
MT-227	Differential Equations	3 0 3	CT-257	Database Management Systems	3 1 4
HS-218	Business Communications	2 1 3	HS-219	Professional Ethics	2 0 2
CT-259	System Analysis & Design	3 0 3	CT-258	Financial & Cost Accounting	3 0 3
HS-205	Islamic Studies OR	2 0 2	MT-272	Linear Algebra & Geometry	3 0 3
HS-209	Ethical Behaviour	- - NC	HS-200	Community Service	- - NC
HSK-2	Chinese Language OR	- - NC			
HS-232	Turkish Language-II	- - NC			

THIRD YEAR

Fall Semester			Spring Semester		
Course Code	Course Title	Credit Hours Th Pr Total	Course Code	Course Title	Credit Hours Th Pr Total
CT-365	Software Engineering	3 0 3	CS-351	Computer Communication Networks	3 1 4
CT-353	Operating Systems	3 1 4	CT-361	Artificial Intelligence & Expert Systems	3 1 4
CT-363	Design and Analysis of Algorithms	3 0 3	CT-362	Web Engineering	3 1 4
MT-331	Probability & Statistics	3 0 3	CT-367	Theory of Programming Languages	3 0 3
CT-364	Theory of Automata and Formal Languages	3 0 3	MT-442	Numerical Methods	3 0 3

FINAL YEAR

Fall Semester			Spring Semester		
Course Code	Course Title	Credit Hours Th Pr Total	Course Code	Course Title	Credit Hours Th Pr Total
CT-460	Network & Information Security	3 1 4	CS-428	Parallel & Distributed Computing	3 1 4
MG-482	Organisational Behaviour	3 0 3	CT-465	Compiler Design	3 0 3
CT-###	Elective I	3 0 3	MG-481	Entrepreneurship	3 0 3
CT-###	Elective II	3 1 4	CT-###	Elective III	3 1 4
CT-499	Software Based Project	0 3 3	CT-499	Software Based Project	0 3 3

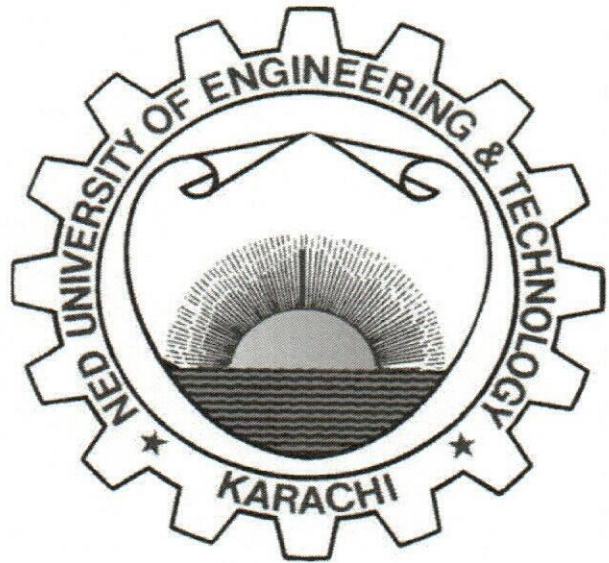
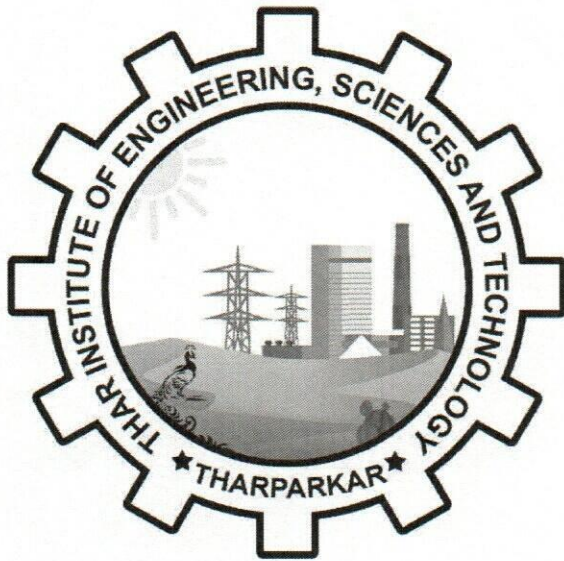
Elective-I (to be chosen from the following)

CT-366	E-Commerce
CT-485	Natural Language Processing
CT-464	Modeling & Simulation

Elective-II & Elective-III (to be chosen from the following)

CT-352	Computer Graphics	CT-463	Data Warehouse Mining
CT-360	Visual Programming	CT-481	Wireless Network & Mobile Computing
CT-462	Distributed Computing	CT-484	Introduction to Cyber Security

* Duration one academic year: Requires literature survey and preliminary work during this Semester



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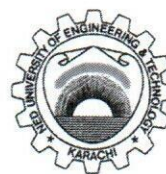
Course Profile

Fall Semester First Year

Department of Computer Science & Information Technology
Bachelor of Science in Computer Science

NED University of Engineering and Technology

Department CS&IT
Program BS (Computer Science)



F/QSP 11/17/01

Course Profile

COURSE CODE& TITLE CT-175 – Programming Fundamentals	SEMESTER <input type="checkbox"/> SPRING <input checked="" type="checkbox"/> FALL	CREDIT HOURS TH <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> 0 PR <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 1 <input type="checkbox"/> 0																				
PREREQUISITE COURSE(S) NIL	DATE OF COURSE CONTENT APPROVAL 27/03/2019	APPLIED FROM BATCH 2021																				
COURSE CONTENTS <p>Introduction to programming languages, Different generations of Languages (1GL,2GL,3GL,4GL,5GL) Basic Programming Constructs, Introduction to problem solving, role of compiler and linker, Pre-processor Directives, introduction to algorithms, Basic data types ,Variables, (Local and Global) , Constants input/output constructs, Types of Operators (Unary, Binary, Ternary), Relational Operators, Arithmetic Operators, Assignment Operators, Logical Operators, prefix and Postfix Increment and Decrement Operators, Repetition Structures. Loops (FOR, WHILE, DO WHILE) Conditional Structures (If, If-Else, Switch), Break and Continue, Introduction to Arrays, Multidimensional arrays, Functions and Procedures , Function Overloading, how to pass an array to a function (Pass by value and Pass By reference), Introduction to modular programming, string and string operations, Structures, pointers/references, static and dynamic memory allocation, File I/O operations.</p>																						
COURSE LEARNING OUTCOME AND ITS MAPPING WITH PROGRAMME LEARNING OUTCOME <table border="1"> <thead> <tr> <th>Sr. No.</th> <th>CLOs</th> <th>Taxonomy level</th> <th>Programme learning outcome (PLO)</th> </tr> </thead> <tbody> <tr> <td colspan="4">At the end of the course, the student will be able to:</td> </tr> <tr> <td>1</td> <td>EXPLAIN basic problem solving steps and logic constructs.</td> <td>C-2</td> <td>PLO-1</td> </tr> <tr> <td>2</td> <td>APPLY basic programing concepts.</td> <td>C-3</td> <td>PLO-3</td> </tr> <tr> <td>3</td> <td>PRACTICE to implement solution of real world problem.</td> <td>C-3</td> <td>PLO-4</td> </tr> </tbody> </table>			Sr. No.	CLOs	Taxonomy level	Programme learning outcome (PLO)	At the end of the course, the student will be able to:				1	EXPLAIN basic problem solving steps and logic constructs.	C-2	PLO-1	2	APPLY basic programing concepts.	C-3	PLO-3	3	PRACTICE to implement solution of real world problem.	C-3	PLO-4
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REMARKS (if any): 																						

Recommended by: _____

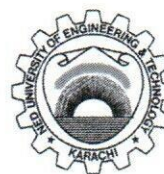
(Chairperson/Date)

Approved by: _____

(Dean/Date)

NED University of Engineering and Technology

Department CS&IT
Program BS (Computer Science)



F/QSP 11/17/01

Course Profile

COURSE CODE& TITLE CT-174 – Fundamentals of Information Technology	SEMESTER <input type="checkbox"/> SPRING <input checked="" type="checkbox"/> FALL	CREDIT HOURS TH <input type="checkbox"/> 3 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> 0 PR <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 1 <input type="checkbox"/> 0	
PREREQUISITE COURSE(S) NIL	DATE OF COURSE CONTENT APPROVAL 27/03/2019	APPLIED FROM BATCH 2021	
COURSE CONTENTS Introduction to IT, recent advances in IT, IT systems, Development of the modern Computer. Introduction to Software, data structures, coding. Programming and problem-solving algorithms. Data types and representation. The basic organization of computers, Number systems. Introduction to Data Communication, Database, Information Systems and MIS, Networks & Internet concepts.			
COURSE LEARNING OUTCOME AND ITS MAPPING WITH PROGRAMME LEARNING OUTCOME			
Sr. No.	CLOs	Taxonomy level	Programme learning outcome (PLO)
At the end of the course, the student will be able to:			
1	Discuss the comprehensive understanding of the basic organization of the computer.	C-2	PLO-1
2	Apply knowledge of fundamental concepts and terminologies in IT including development coding programming data communications and organization.	C-3	PLO-2
3	Use applications to improve efficiency and skills in collecting, analyzing, interpreting and presenting findings and data.	C-3	PLO-3
REMARKS (if any):			

Recommended by: _____

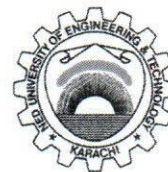
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NED University of Engineering and Technology

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Course Profile

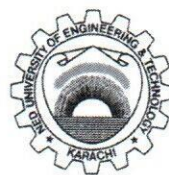
COURSE CODE& TITLE PH-122 – Applied Physics	SEMESTER <input type="checkbox"/> SPRING <input checked="" type="checkbox"/> FALL	CREDIT HOURS TH <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> 0 PR <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 1 <input type="checkbox"/> 0																								
PREREQUISITE COURSE(S) NIL	DATE OF COURSE CONTENT APPROVAL 27/03/2019	APPLIED FROM BATCH 2021																								
COURSE CONTENTS Fundamentals: Kinetics, potential, vibrational and rotational energies. Electricity and Magnetism: Charge, Ohm's Law, Direct and Alternating currents, capacitance and inductance (self and mutual inductance), Kirchoff's Laws, thermo-electricity, Seebeck and Peltier effects. Galvanometer, Ammeter and Voltmeter, Cathode-Ray Oscilloscope, Magnetic Properties (permeability and susceptibility), diamagnetism, paramagnetism and ferromagnetism. Induction coil and transformer. Electronics: Semiconductors, P-type, N-type semiconductors, PN-diode and its characteristics, PNP and NPN transistors and their characteristics. Optics & Laser Physics: Interference, diffraction and polarization phenomena. Laser stimulated emission, the population in version, laser application. Modern Physics: Atomic structure, Black body radiation, Photon, de-Broglie's Waves, photoelectric effect, Compton effect, Mass-Energy conversion relation. Nuclear structure, Radioactivity, Alpha, Beta and Gamma particles and their properties. Radioactivity. Decay Theorem, Half-life X-Rays, characteristics and applications of X-Rays, Liquid-drop model, Fission and Fusion processes, Nuclear Reactor, Nuclear radiation, Hazards and safety. Thermodynamics and Cyrogenics: Heat, Temperature and internal energy, Laws of thermodynamics (Zeroth, 1st, 2nd and 3rd laws), Concept of entropy, Cyrogenics, low temperature, method of production of low temperature (joule-Kelvin Effect, Adiabatic demagnetisation).																										
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(Chairperson/Date)

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(Dean/Date)

NED University of Engineering and Technology

Department CS&IT
Program BS (Computer Science)



F/QSP 11/17/01

Course Profile

COURSE CODE& TITLE HS-104 Functional English	SEMESTER SPRING <input checked="" type="checkbox"/> ALL	CREDIT HOURS TH <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> 0 PR <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 0																				
PREREQUISITE COURSE(S) NIL	DATE OF COURSE CONTENT APPROVAL	APPLIED FROM BATCH																				
COURSE CONTENTS <p>Listening: types of listening, problems in listening and coping strategies, listening skills, sub skills, practice in listening, note taking: techniques for taking notes from lectures, from books, note taking in different forms paragraphs, points, figures, processes, tables, graphs etc. vocabulary development: enhancing current vocabulary to reflect a better usage of words in spoken and written language, tips/ strategies in vocabulary enhancement, practice in vocabulary development. Reading: reading skills, sub skills, reading comprehension levels, reading strategies, reading practice through variety of reading texts and comprehension exercises, beyond reading (outline, précis, speech and presentation). Writing: process of writing, informal writing strategies, writing correctly: sentence structure and punctuation, error correction, paragraphs: structure, types, topic and the topic sentence, and unity, adequate development and coherence in paragraphs, essays: types, five paragraphs long essays, and structure (thesis statement and the paragraphs), short reports: structure, format, and types (informational and analytical), letters: elements, style, formatting (digital letter writing), organization and structure of the letter, and types (routine requests and intimation, invitation, thank you and condolence letters etc.).</p>																						
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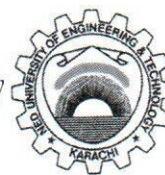
(Chairperson/Date)

Approved by: _____

(Dean/Date)

NED University of Engineering and Technology

Department CS&IT
Program BS (Computer Science)



F/QSP 11/17/01

Course Profile

COURSE CODE& TITLE HS-105 Pakistan Studies	SEMESTER <input type="checkbox"/> SPRING <input checked="" type="checkbox"/> FALL	CREDIT HOURS TH <input type="checkbox"/> 3 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> 0 PR <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 0																
PREREQUISITE COURSE(S) NIL	DATE OF COURSE CONTENT APPROVAL 27/03/2019	APPLIED FROM BATCH 2021																
COURSE CONTENTS Land of Pakistan; Geopolitical and strategic importance of Pakistan, Geo-physical conditions of Pakistan, Natural resources: minerals, water and power; Constitutional Process in Pakistan, Early efforts to make a constitution (1947-1956); problems and issues, Salient features of the constitution of 1956 and its abrogation; Salient features of the constitution of 1962 and its abrogation; Constitutional and political crisis of 1971, Salient features of the constitution of 1973; Constitutional developments since 1973 to date with special reference to the amendments to the constitutions; Economy of Pakistan: A brief survey of Pakistan Economy, An overview of current economic situation in Pakistan, problems, issues and future prospects; Social Issues: Pakistani Society and Culture-Broad features, Citizenship: national and international, Literacy and education in Pakistan: problems and issues, state of Science and Technology in Pakistan: A comparison with other countries with special reference to the Muslim world; Environmental Issues, Environmental pollution and its hazards: causes, and solutions, Environmental issues in Pakistan: government policies and measures and suggestions for improvement, Pakistan's role in the preservation of nature through international conventions / treaties; Pakistan's Foreign Policies; A brief survey of Relation with Neighbours, Super Powers; A brief survey of Relation with the Muslim World; Human Rights; Conceptual foundations of Human Rights, Constitutional Provisions of Human rights; The international treaties and obligations, State of human rights in Pakistan; Historical and Ideological perspective of Pakistan movement; Two nation theory, Factors for creation of Pakistan, Quaid-i-Azam and demand for Pakistan.																		
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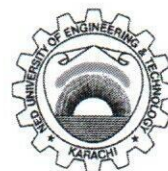
Approved by: _____

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NED University of Engineering and Technology

Department CS&IT
Program BS Computer Science

Course Profile



F/QSP 11/17/01

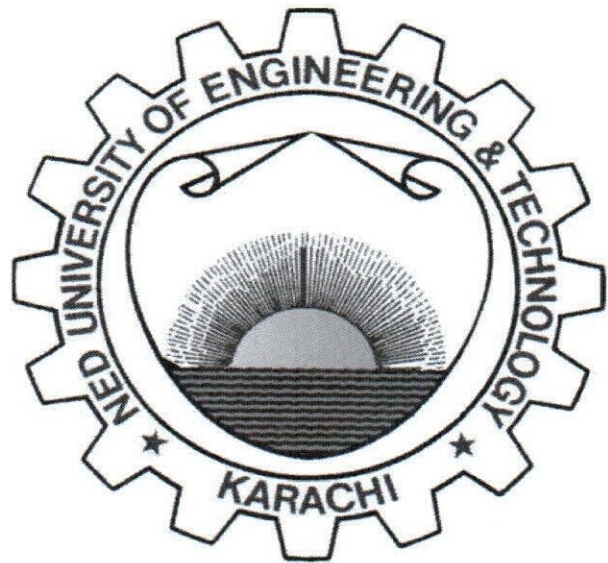
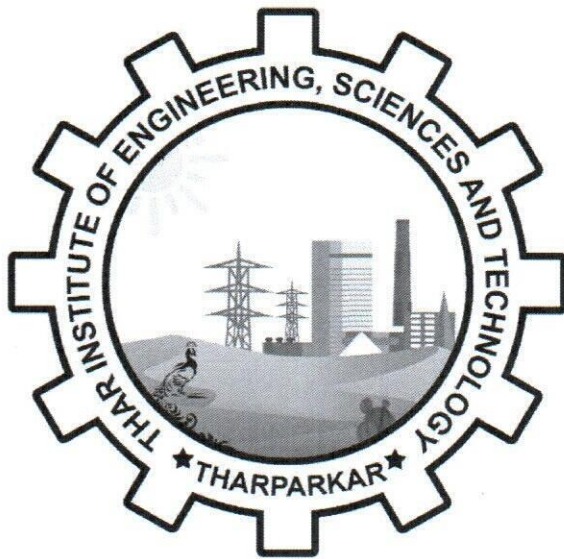
COURSE CODE& TITLE HS-127 Pakistan Studies (For Foreigners Studies)	SEMESTER <input type="checkbox"/> SPRING <input checked="" type="checkbox"/> FALL	CREDIT HOURS TH <input type="checkbox"/> 3 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> 0 PR <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 0	
PREREQUISITE COURSE(S) NIL	DATE OF COURSE CONTENT APPROVAL 27/03/2019	APPLIED FROM BATCH 2021	
COURSE CONTENTS Land of Pakistan: Land and People – Strategic importance, Important beautiful sights, National resources. A brief Historical Background: A brief historical survey of Muslim community in the sub-continent, British rule and its impacts, Indian reaction, two nation theory, Origin and development factors leading towards the demand of a separate Muslim state, Creation of Pakistan. Government and politics in Pakistan: Constitution of Pakistan: A brief outline, Government structure Federal and Provisional – Local Government Institution Political History, A brief account. Language and Culture: Origin of Urdu Language, Influence of Arabic and Persian on Urdu Language and Literature, A short history of Urdu literature			
COURSE LEARNING OUTCOME AND ITS MAPPING WITH PROGRAMME LEARNING OUTCOME			
Sr. No.	CLOs	Taxonomy level	Programme learning outcome (PLO)
At the end of the course, the student will be able to:			
1.	Acquire the Knowledge of Historical, Ideological, Socio-Economic and Political aspects of Pakistan as nation and State.	C-3	PLO-6
2.	Depict a facilitative response to Pakistan's culture, issues and challenges through appropriate actions and advocacy.	C-5	PLO-10
REMARKS (if any):			

Recommended by: _____

(Chairperson/Date)

Approved by: _____

(Dean/Date)



Thar Institute of Engineering Sciences and Technology
A Constituent College of NED University of Engineering & Technology

Course Profile

Spring Semester First Year

Department of Computer Science & Information Technology
Bachelor of Science in Computer Science

NED University of Engineering and Technology

Department CS&IT
Program BS (Computer Science)



F/QSP 11/17/01

Course Profile

COURSE CODE & TITLE CS-251 Logic Design & Switching Theory	SEMESTER ■ SPRING □ FALL	CREDIT HOURS TH ■3 □2 □1 □0 PR □3 □2 ■1 □0																				
PREREQUISITE COURSE(S) NIL	DATE OF COURSE CONTENT APPROVAL 27/03/2019	APPLIED FROM BATCH 2021																				
COURSE CONTENTS <p>Truth Functions: Binary connectives, Evaluation of Truth Functions, Physical realisations, Sufficient set of connectives. Truth Functional calculus. Boolean Algebra, Duality, Fundamental Theorems of Boolean Algebra, Switches and Relays, Logic Circuits, Speed and Delays in Logic Circuits. Minimization of Boolean Functions: Minterm and Maxterm, Karnaugh map, Simplification of Boolean Functions, POS and SOP expressions. Tabular Minimization: Prime Implicants. Sequential Networks: Latches, Fundamental Mode, Synthesis of Sequential Networks, Minimization of the number of states, Clocked networks, Special realizations and codes: Binary adders, Coding of numbers, Decoders and code conversion. ROMS, NAND and NOR Implementation, Parity Checkers.</p>																						
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NED University of Engineering and Technology

Department CS&IT
Program BS (Computer Science)



F/QSP 11/17/01

Course Profile

COURSE CODE& TITLE CT-162 – Discrete Structures	SEMESTER ■ SPRING □ FALL	CREDIT HOURS TH ■3 □2 □1 □0 PR □3 □2 □1 ■0																				
PREREQUISITE COURSE(S) NIL	DATE OF COURSE CONTENT APPROVAL 27/03/2019	APPLIED FROM BATCH 2021																				
COURSE CONTENTS Mathematical logic, Sets, Functions, Algorithms, Complexity of Algorithms, Mathematical reasoning, Induction, Recursion, Sequences and Sums, Recursive Definitions, Recursive Algorithms, Counting, The Pigeonhole Principal, Permutations and Combinations, Binomial Coefficients, Discrete Probability, Expected Value and Variance, Recurrence Relations, Solving Recurrence Relations, Divide-and-Conquer Relations, Generating Functions, InclusionExclusion Relations and their Properties, Representing Relations, Closures of Relations, Equivalence Relations, Partial Ordering, Introduction to Graphs, Graph Terminology, Representing Graphs and Graph Isomorphism, Connectivity, Euler and Hamilton Paths, Shortest Path Problems, Introduction to Trees, Applications of Trees, Tree Traversal, Spanning Trees, Minimum Spanning Trees, Boolean Algebra, Boolean Functions, Representing Boolean Functions, Logic Gates, Minimization of Circuits, Modeling Computation, Languages and Grammars, Finite-State Machines with output, Finite-State Machines with no output, Language Recognition.																						
COURSE LEARNING OUTCOME AND ITS MAPPING WITH PROGRAMME LEARNING OUTCOME <table border="1"> <thead> <tr> <th>Sr. No.</th> <th>CLOs</th> <th>Taxonomy level</th> <th>Programme learning outcome (PLO)</th> </tr> </thead> <tbody> <tr> <td colspan="4">At the end of the course, the student will be able to:</td> </tr> <tr> <td>1</td> <td>Comprehend the key concepts of discrete structures.</td> <td>C2</td> <td>PLO-1</td> </tr> <tr> <td>2</td> <td>Apply logical reasoning to real-world computing problems.</td> <td>C3</td> <td>PLO-2</td> </tr> <tr> <td>3</td> <td>Analyze discrete structures in the context of computer science.</td> <td>C4</td> <td>PLO-3</td> </tr> </tbody> </table>			Sr. No.	CLOs	Taxonomy level	Programme learning outcome (PLO)	At the end of the course, the student will be able to:				1	Comprehend the key concepts of discrete structures.	C2	PLO-1	2	Apply logical reasoning to real-world computing problems.	C3	PLO-2	3	Analyze discrete structures in the context of computer science.	C4	PLO-3
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2	Apply logical reasoning to real-world computing problems.	C3	PLO-2																			
3	Analyze discrete structures in the context of computer science.	C4	PLO-3																			
REMARKS (if any):																						

Recommended by: _____

(Chairperson/Date)

Approved by: _____

(Dean/Date)

NED University of Engineering and Technology

Department CS&IT
Program BS (Computer Science)



F/QSP 11/17/01

Course Profile

COURSE CODE& TITLE CT-251 Object Oriented Programming	SEMESTER ■ SPRING □ FALL	CREDIT HOURS TH ■3 □2 □1 □0 PR □3 □2 ■1 □0	
PREREQUISITE COURSE(S) CT-175 Programming Fundamentals	DATE OF COURSE CONTENT APPROVAL 27/03/2019	APPLIED FROM BATCH 2021	
COURSE CONTENTS What is an Object, Benefits of OOP; Object Oriented Environment; Class Object; Approach to Object Oriented Programming (from C to C++); Constructor; Destructor; Program Style; Functions; Inheritance, I/O streams, Overloading operations, Programming Examples			
COURSE LEARNING OUTCOME AND ITS MAPPING WITH PROGRAMME LEARNING OUTCOME			
Sr. No.	CLOs	Taxonomy level	Programme learning outcome (PLO)
At the end of the course, the student will be able to:			
1.	To recognize the principles of object-oriented paradigm	C1	PLO 1
2.	To comprehend the objects & their relationships to build object-oriented solution	C2	PLO 2
3.	To implement an object-oriented solution for a given case study	C3	PLO 3
REMARKS (if any):			

Recommended by: _____

(Chairperson/Date)

Approved by: _____

(Dean/Date)

NED University of Engineering and Technology

Department CS&IT
Program BS (Computer Science)



F/QSP 11/17/01

Course Profile

COURSE CODE & TITLE HS-115 Academic Reading & Writing	SEMESTER <input checked="" type="checkbox"/> SPRING <input type="checkbox"/> FALL	CREDIT HOURS TH <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> 0 PR <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 0	
PREREQUISITE COURSE(S) -NIL-	DATE OF COURSE CONTENT APPROVAL 27/03/2019	APPLIED FROM BATCH 2021	
COURSE CONTENTS Reading and Critical Thinking: Reading academic texts effectively, Using strategies for extracting and locating information in text and visuals; identifying main idea and purpose; separating main points from supporting details; drawing inferences and conclusions in a text. Identifying the writer's intent (cause and effect, reasons, comparison and contrast, exemplification etc.). Interpreting charts and diagrams. Making appropriate notes using strategies mind maps, tables, lists, graphs. Reading and carrying out instructions for tasks, assignments and examination questions. Enhance academic vocabulary using appropriate skills and strategies; and identifying pronunciation through pronunciation key. Writing Academic Texts. Planning writing task: identifying audience, purpose and message (content). Collect information in various forms such as mind maps, tables, charts, lists. Argumentative, narrative, expository and descriptive forms of writing. Write good topic and supporting sentences and effective conclusions. Achieving unity, coherence, adequate development in writing. Use appropriate cohesive devices such as reference words and signal markers. Order & Organize information: Chronology for a narrative, listing, Stages of a process, from general to specific and vice versa, from most important to least important, advantages and disadvantages, comparison and contrast, problem solution pattern, for and against; using different methods of developing ideas like listing, comparison, and contrast, cause and effect, for and against. Revising/Redraft checking content, structure and language. Edit and proof read.			
COURSE LEARNING OUTCOME AND ITS MAPPING WITH PROGRAMME LEARNING OUTCOME			
Sr. No.	CLOs	Taxonomy level	Programme learning outcome (PLO)
At the end of the course, the student will be able to:			
1	Comprehend explicit and implicit information in various academic texts using relevant reading strategies.	C-2	PLO-7
2	Compose organized, coherent, and effective texts of various academic genres using writing processes and strategies.	C-6	PLO-7
3	Use paraphrasing, summarizing, and referencing skills to avoid plagiarism.	C-3	PLO-7
REMARKS (if any):			

Recommended by: _____

(Chairperson/Date)

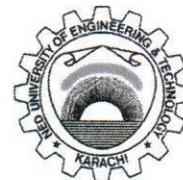
Approved by: _____

(Dean/Date)

NED University of Engineering and Technology, Karachi.

Department CS&IT

Program (BS Computer Science)



F/QSP 11/17/00

Course Profile

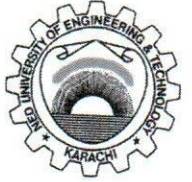
COURSE CODE& TITLE HSK-1 Chinese Language-I (HS-220)	SEMESTER <input checked="" type="checkbox"/> SPRING <input type="checkbox"/> FALL	CREDIT HOURS TH <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> 0 PR <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 0
PREREQUISITE COURSE(S) None	DATE OF APPROVAL 23-06-2022	BATCH 2021-2024

COURSE CONTENTS

S.No.	Topic	Contents	Remarks (if any)
1	Chapter#1 “你好”	Pinyin and greeting	
2	Chapter#2 “谢谢你”	Pinyin and Thanking words	
3	Chapter#3 “你叫什么名字”	Introductory Sentences and Pinyin	
4	Chapter#4 “他是我的汉语老师”	是 sentence	
5	Chapter#4 “他是我的汉语老师”	usage of 的	
6	Chapter#5 “她女儿今年二十岁”	How to talk about your age	
7	Chapter#6 “我会说汉语”	会 sentences	
8	Chapter#6 “我会说汉语”	Grammar: Adjectives	
9	Midterm Examination		
10	Chapter#7 “今天几号”	About date, day and numbers	
11	Chapter#8 “我想喝茶”	How to use 想 in the sentences	
12	Chapter#9 “你儿子在哪儿工作”	在 as a preposition and interrogative pronoun 呢	
13	Chapter#9 “你儿子在哪儿工作”	在 as a preposition and interrogative pronoun 呢	
14	Chapter#10 “我能做这儿吗”	有 sentence and the Conjunction 和	
15	Chapter#10 “我能做这儿吗”	有 sentence and the Conjunction 和	
16	Final Examination		

NED University of Engineering and Technology, Karachi.

Department CS&IT
Program (BS Computer Science)



F/QSP 11/17/00

Course Profile

TEXTBOOKS (Book Name, Authors, edition, Publisher, Year)

1. Standard Course HSK-01, Jiang Liping, Beijing Language and Culture University Press, 2013

COURSE LEARNING OUTCOME AND ITS MAPPING WITH PROGRAMME LEARNING OUTCOME

Sr. No.	CLOs	Taxonomy level	Programme learning outcome (PLO)
At the end of the course, the student will be able to:			
1	Recognize Chinese orthography (Pinyin) and phonics (sounds of initials and finals and pronunciation)	C1	Communication
2	Identify basic Chinese words and morphemes along with basic grammatical forms.	C1	Communication
3	Reproduce simple statements and questions in writing and conversations on a variety of everyday topics.	C1	Communication

REMARKS (if any):

Recommended by: Prof. Dr. Sajida Zaki

(Chairperson HSD/23-06-2022)

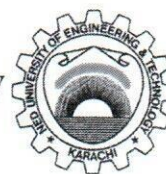
Approved by:

(Dean/Date)

16.12.2022

NED University of Engineering and Technology

Department CS&IT
Program BS (Computer Science)



F/QSP 11/17/01

Course Profile

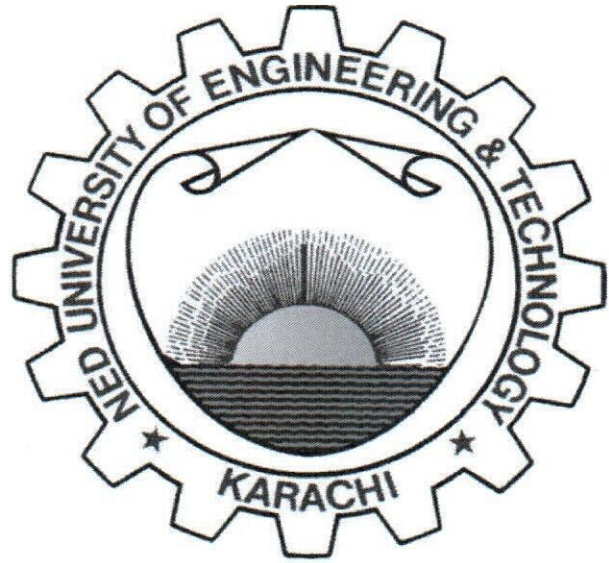
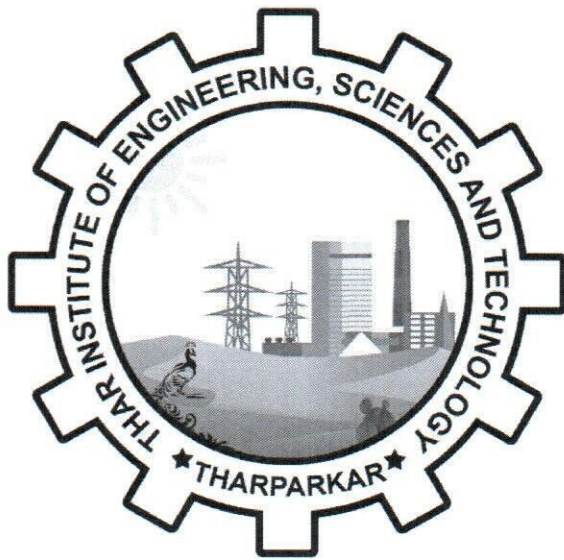
COURSE CODE& TITLE MT-171 – Differential & Integral Calculus	SEMESTER <input checked="" type="checkbox"/> SPRING <input type="checkbox"/> FALL	CREDIT HOURS TH <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> 0 PR <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 0																
PREREQUISITE COURSE(S) NIL	DATE OF COURSE CONTENT APPROVAL 27/03/2019	APPLIED FROM BATCH 2021																
COURSE CONTENTS Review of vectors, Vector derivatives. Line and Surface Integrals. The gradient of a Scalar. Complex Number: Argand diagram, De Moivre formula, the root of polynomial equations, curve and regions in the complex plane, standard functions and their inverses (exponential, circular and hyperbolic functions). Bounds and bounded sets, Limit point of sets, Sequences, Convergence of sequences monotonic sequences, Functions and their graph, limit of a function and continuous functions. Differentiation and Successive differentiation and its application; Leibnitz theorem, Taylor and Maclaurin theorems with remainders in Cauchy and Lagrange form, Taylor and Maclaurin series, L' Hopitals rule, extreme values of a function of one variable using the first and second derivative test, asymptotes of a function, curvature and radius of curvature of a curve, partial differentiation, exact differential and its application in computing errors, Multivariate functions, Maxima and Minima for multivariate functions, Maxima Minima under certain conditions (Lagrange Multiplier). Indefinite integrals and their computational techniques, reduction formulae definite integrals and their convergence, Beta and Gamma functions and their identities, double and triple integration with applications (Area, volume, centroid, inertia, arc length). Scalar and Vector quantities, physical and geometrical meanings. Algebra of vectors. Scalar and Vector triple products.																		
COURSE LEARNING OUTCOME AND ITS MAPPING WITH PROGRAMME LEARNING OUTCOME <table border="1"> <thead> <tr> <th>Sr. No.</th> <th>CLOs</th> <th>Taxonomy level</th> <th>Programme learning outcome (PLO)</th> </tr> </thead> <tbody> <tr> <td colspan="4">At the end of the course, the student will be able to:</td> </tr> <tr> <td>1</td> <td>Identify functions and define real and complex numbers</td> <td>C-1</td> <td>PLO-2</td> </tr> <tr> <td>2</td> <td>Apply differential, integral and vector calculus to engineering problems.</td> <td>C-3</td> <td>PLO-3</td> </tr> </tbody> </table>			Sr. No.	CLOs	Taxonomy level	Programme learning outcome (PLO)	At the end of the course, the student will be able to:				1	Identify functions and define real and complex numbers	C-1	PLO-2	2	Apply differential, integral and vector calculus to engineering problems.	C-3	PLO-3
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2	Apply differential, integral and vector calculus to engineering problems.	C-3	PLO-3															
REMARKS (if any):																		

Recommended by: _____

(Chairperson/Date)

Approved by: _____

(Dean/Date)



Thar Institute of Engineering Sciences and Technology
A Constituent College of NED University of Engineering & Technology

Course Profile

Fall Semester Second Year

Department of Computer Science & Information Technology
Bachelor of Science in Computer Science

NED University of Engineering and Technology

Department CS&IT
Program BS (Computer Science)



F/QSP 11/17/01

Course Profile

COURSE CODE & TITLE CT-157 Data Structures Algorithms & Applications	SEMESTER <input type="checkbox"/> SPRING <input checked="" type="checkbox"/> FALL	CREDIT HOURS TH <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> 0 PR <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 1 <input type="checkbox"/> 0	
PREREQUISITE COURSE(S) - NIL -	DATE OF COURSE CONTENT APPROVAL 27/03/2019	APPLIED FROM BATCH 2021	
COURSE CONTENTS A detailed study of the basic data structures commonly used in data processing; Techniques for data manipulation in structures such as stacks, queues, linked lists trees and graphs, management of memory space and overflow, sorting, and hash table methods; Searching and merging files, implementation and evaluation of various programming assignments.			
COURSE LEARNING OUTCOME AND ITS MAPPING WITH PROGRAMME LEARNING OUTCOME			
Sr. No.	CLOs	Taxonomy level	Programme learning outcome (PLO)
At the end of the course, the student will be able to:			
1	Comprehend various data structures and their algorithms and their use in simple applications.	C-2	PLO-1
2	Analyze simple algorithms and determine their complexities.	C-4	PLO-3
3	Apply the knowledge of data structure to other application domains.	C-3	PLO-2
REMARKS (if any):			

Recommended by: _____

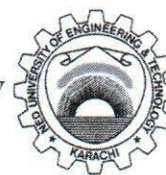
(Chairperson/Date)

Approved by: _____

(Dean/Date)

NED University of Engineering and Technology

Department CS&IT
Program BS (Computer Science)



F/QSP 11/17/01

Course Profile

COURSE CODE & TITLE MT-227 Differential Equations	SEMESTER <input type="checkbox"/> SPRING <input checked="" type="checkbox"/> FALL	CREDIT HOURS TH <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> 0 PR <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 0																
PREREQUISITE COURSE(S) MT-171 Differential & Integral Calculus	DATE OF COURSE CONTENT APPROVAL 27/03/2019	APPLIED FROM BATCH 2021																
COURSE CONTENTS <p>1st Order Differential Equations Basic concept; Formation of differential equations and solution of differential equations by direct integration and by separating the variables; Homogeneous equations and equations reducible to homogeneous form; Linear differential equations of the order and equations reducible to the linear form; Bernoulli's equations . Application in relevant Engineering; orthogonal trajectories: Numerical approximation to solutions ; Solution in series. Euler method, Euler modified method, Runge Kutta method of order 4.</p> <p>2nd and Higher Orders Equations Special types of II nd order differential equations with constant coefficients and their solutions; The operator D; Inverse operator I/D ; Solution of differential by operator D methods; Special cases, Cauchy's differential equations; Simultaneous differential equations; simple application of differential equations in relevant Engineering.</p> <p>Partial Differential Equation Basic concepts and formation of partial differential equations; Linear homogeneous partial differential equations and relations to ordinary differential equations; Solution of first order linear and special types of second and higher order differential equations; D' Alembert's solution of the wave equation and two dimensional wave equations; Lagrange's solution: Various standard forms.</p> <p>Laplace Integral & Transformation Definition, Laplace transforms of some elementary functions, first translation or shifting theorem, second translation or shifting theorem, change of scale property, Laplace transform of the nth order derivative, initial and final value theorem Laplace transform of integrals. Laplace transform of functions $\ln F(t)$ and $F(t)/t$, Laplace transform of periodic function, evaluation of integrals, definition of inverse Laplace transform and inverse transforms, convolution theorem, solutions of ordinary differential using Laplace transform.</p>																		
COURSE LEARNING OUTCOME AND ITS MAPPING WITH PROGRAMME LEARNING OUTCOME <table border="1"> <thead> <tr> <th>Sr. No.</th> <th>CLOs</th> <th>Taxonomy level</th> <th>Programme learning outcome (PLO)</th> </tr> </thead> <tbody> <tr> <td colspan="4">At the end of the course, the student will be able to:</td> </tr> <tr> <td>1</td> <td>Describe formation of differential equations to explain physical situations</td> <td>C-2</td> <td>PLO-2</td> </tr> <tr> <td>2</td> <td>Apply appropriate methods to solve differential equations and use Laplace transform in relevant engineering problems.</td> <td>C-3</td> <td>PLO-3</td> </tr> </tbody> </table>			Sr. No.	CLOs	Taxonomy level	Programme learning outcome (PLO)	At the end of the course, the student will be able to:				1	Describe formation of differential equations to explain physical situations	C-2	PLO-2	2	Apply appropriate methods to solve differential equations and use Laplace transform in relevant engineering problems.	C-3	PLO-3
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2	Apply appropriate methods to solve differential equations and use Laplace transform in relevant engineering problems.	C-3	PLO-3															
REMARKS (if any):																		

Recommended by: _____

(Chairperson/Date)

Approved by: _____

(Dean/Date)

NED University of Engineering and Technology

Department CS&IT
Program BS (Computer Science)



F/QSP 11/17/01

Course Profile

COURSE CODE & TITLE HS-218 Business Communication	SEMESTER <input type="checkbox"/> SPRING <input checked="" type="checkbox"/> FALL	CREDIT HOURS TH <input type="checkbox"/> 3 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> 0 PR <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 1 <input type="checkbox"/> 0	
PREREQUISITE COURSE(S) -NPL-	DATE OF COURSE CONTENT APPROVAL 27/03/2019	APPLIED FROM BATCH 2021	
COURSE CONTENTS Foundations of Business Communication: Definitions: communication, organization, business; understanding the need and scope of business, professional and organizational communication, Conditions, properties, process, tools, modes, levels, types of communication; Principles of Effective Communication & Building goodwill (You attitude, positive emphasis and unbiased language); Listening, non-verbal communication. Communication dilemmas and problems; Feedback and its types; Audience Analysis. Oral Communication: Group Discussions and interpersonal skills, Meetings, Interviews, Making presentations. Business & Technical Writing: Types of messages: Formats (Letter and memorandum); Letter and memorandum elements and formats. Three Types of Business Messages (routine, negative and persuasive communications). Organizational Plans: Direct, Indirect & AIDA approach; Writing business messages (e-mails, inquiries, requests, replies, regrets, declining offers, letters, routine messages, etc.); Meetings: notice, agenda and minutes. Job applications and resumes. Research/scientific reports (structure, layout, writing process)			
COURSE LEARNING OUTCOME AND ITS MAPPING WITH PROGRAMME LEARNING OUTCOME			
Sr. No.	CLOs	Taxonomy level	Programme learning outcome (PLO)
At the end of the course, the student will be able to:			
1	Demonstrate effective oral communication and interpersonal skills in simulated professional and business situations.	A-3	PLO-7
2	Apply principles of effective communication in various types of business messages.	C-3	PLO-7
3	Compose effective business messages for various purposes and audiences.	C-6	PLO-7
REMARKS (if any):			

Recommended by: _____

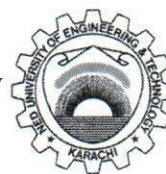
(Chairperson/Date)

Approved by: _____

(Dean/Date)

NED University of Engineering and Technology

Department CS&IT
Program BS (Computer Science)



F/QSP 11/17/01

Course Profile

COURSE CODE & TITLE CT-259 System Analysis & Design	SEMESTER <input type="checkbox"/> SPRING <input checked="" type="checkbox"/> FALL	CREDIT HOURS TH <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> 0 PR <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 0	
PREREQUISITE COURSE(S) - NIL -	DATE OF COURSE CONTENT APPROVAL 27/03/2019	APPLIED FROM BATCH 2021	
COURSE CONTENTS Study of conventional and structured techniques, Objectives, investigations, system models, etc. Physical models; Data models; Project dictionary. System design and implementation; tools and techniques; Prototyping; Preparation and handling of data, File organization design, documentation; Implementation and evaluation of information systems, Problems of systems analysis and design; Project management tools and techniques: A case study as assignment.			
COURSE LEARNING OUTCOME AND ITS MAPPING WITH PROGRAMME LEARNING OUTCOME			
Sr. No.	CLOs	Taxonomy level	Programme learning outcome (PLO)
At the end of the course, the student will be able to:			
1	Identify methodologies of analysis, design and development of software application	C-1	PLO-2
2	Explain business and system requirements for various software development case studies.	C-2	PLO-3
3	Apply UML methods to design solutions related to technical and non-technical requirements.	C-3	PLO-6
REMARKS (if any):			

Recommended by: _____

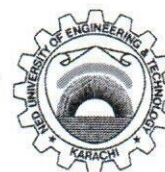
(Chairperson/Date)

Approved by: _____

(Dean/Date)

NED University of Engineering and Technology

Department CS&IT
Program BS (Computer Science)



F/QSP 11/17/01

Course Profile

COURSE CODE& TITLE HS-205 – Islamic Studies	SEMESTER <input type="checkbox"/> SPRING <input checked="" type="checkbox"/> FALL	CREDIT HOURS TH <input type="checkbox"/> 3 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> 0 PR <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 0
PREREQUISITE COURSE(S) NIL	DATE OF COURSE CONTENT APPROVAL 27/03/2019	APPLIED FROM BATCH 2021

COURSE CONTENTS

Thematic Study of Holy Quran Basic Islamic Beliefs Tauheed: Al-Ambiya – 22, Al Baqarah – 163 – 164 Prophethood: Al-Imran – 79, Al-Hashr – 7, Al- Madina – 3 Hereafter: Al-Hajj – 5, Al- Baqarah – 48, and two Ahadith. Basic Islamic Practices: Al-Mu'minun – 1-11 Amer-bil-Ma'roof wa Nahi Anil Munkar: The concept of Good and Evil; Importance and Necessity of Da'wat-e-Deen, Al-Imran – 110; Method of Da'wat-e-Deen. An-Nahl – 125, Al – Imran – 104. and two Ahadith. Unity of the Ummah: Al-Imran – 103, Al-Hujurat – 10, Al-Imran – 64, Al-An'am – 108, and two Ahadith. Kasb-e-Halal: Ta ha-81, Al-A'raf-32-33, Al-Baqarah-188, and two Ahadith. Huquq-ul- Ibad Protection of Life: Al-Maidah – 32 Right to Property: An-Nisa – 29 Right to Respect & Dignity: Al-Hujurat – 11-12 Freedom of Expression: Al-Baqarah – 256 Equality: Al-Hujurat – 13 Economic Security: Al-Ma'arij – 24-25 Employment Opportunity on Merit: An-Nisa – 58 Access to Justice: An-Nisa - 135 Women Rights: An-Nahl - 97, Al-Ahzab - 35, An-Nisa - 7 Relation With Non-Muslims: Al-Mumtahanah – 8-9, Al-Anfal – 61, and The Last Sermon of Hajj of Holy Prophet (PBUH) at Arafat on 10th Zil Haj – Relevant extracts. Seerat (life) of the Holy Prophet (PBUH): Birth, life in Makkah, declaration of Prophethood, preaching and its difficulties, migration to Madina, Brotherhood (Mawakhat) and Madina Charter, the Holy Wars of the Prophet (Ghazwat-e-Nabawi), Hujjat-ul-Wida, the Last Sermon of Khutbat-ul-Wida: Translation and important points. Islamic Civilisation: In the Sub-Continent – Pre-Islamic civilization. The political, social and moral impacts of Islamic Civilisation. In the World - Academic, intellectual, social and cultural impacts of Islam on the world.

COURSE LEARNING OUTCOME AND ITS MAPPING WITH PROGRAMME LEARNING OUTCOME

Sr. No.	CLOs	Taxonomy level	Programme learning outcome (PLO)
At the end of the course, the student will be able to:			
1	Explain the given Quranic verses and Hadiths to their tangible meaning and message.	C-2	PLO-9
2	Describe the basic concepts of Shariah, the features of Seerat-un-Nabi (SAW), and the impact of Islam on our society.	C-2	PLO-9

REMARKS (if any):

Recommended by: _____

(Chairperson/Date)

Approved by: _____

(Dean/Date)

NED University of Engineering and Technology

Department CS&IT
Program BS (Computer Science)



F/QSP 11/17/01

Course Profile

COURSE CODE& TITLE HS-209- Ethical Behaviour	SEMESTER <input type="checkbox"/> SPRING <input checked="" type="checkbox"/> FALL	CREDIT HOURS TH <input type="checkbox"/> 3 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> 0 PR <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 0																
PREREQUISITE COURSE(S) NIL	DATE OF COURSE CONTENT APPROVAL 27/03/2019	APPLIED FROM BATCH 2021																
COURSE CONTENTS Introduction to Ethics: Definition of Ethics; Definition between normative and positive science; Problem of Freewill; Method of Ethics; Uses of Ethics. Ethical Theories: History of Ethics - Greek Ethics, Medieval, Modern Ethics. Basic Concept of right and wrong: good and evil; Unilateralism, hedonism, Self-realisation – Egoism, intuitionism; Kant's moral philosophy. Ethics & Religion: The relation of Ethics to Religion; Basic ethical principles of major religions: Hinduism, Judaism, Buddhism, Zoroastrianism, Christianity, Islam. Ethics, Society, and moral theory: Ethical foundation of Rights and Duties; Applied Ethics; Society as the background of moral life; Universalism and Altruism; Theories of punishment.																		
COURSE LEARNING OUTCOME AND ITS MAPPING WITH PROGRAMME LEARNING OUTCOME <table border="1"> <thead> <tr> <th>Sr. No.</th> <th>CLOs</th> <th>Taxonomy level</th> <th>Programme learning outcome (PLO)</th> </tr> </thead> <tbody> <tr> <td colspan="4">At the end of the course, the student will be able to:</td> </tr> <tr> <td>1</td> <td>Explain the ethical teachings of the world's major religions.</td> <td>C-2</td> <td>PLO-9</td> </tr> <tr> <td>2</td> <td>Describe the importance and implications of ethics on individuals and societies.</td> <td>C-2</td> <td>PLO-9</td> </tr> </tbody> </table>			Sr. No.	CLOs	Taxonomy level	Programme learning outcome (PLO)	At the end of the course, the student will be able to:				1	Explain the ethical teachings of the world's major religions.	C-2	PLO-9	2	Describe the importance and implications of ethics on individuals and societies.	C-2	PLO-9
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REMARKS (if any):																		

Recommended by: _____

(Chairperson/Date)

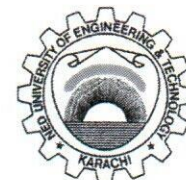
Approved by: _____

(Dean/Date)

NED University of Engineering and Technology, Karachi.

Department CS&IT

Program (BS Computer Science)



F/QSP 11/17/00

Course Profile

COURSE CODE& TITLE HS-221 HSK2 Chinese Language Course-II	SEMESTER <input type="checkbox"/> SPRING <input checked="" type="checkbox"/> FALL	CREDIT HOURS TH <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> 0 PR <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 0
PREREQUISITE COURSE(S) HSK-01	DATE OF APPROVAL 23-6-2022	BATCH 2021-2024

COURSE CONTENTS

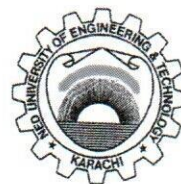
S. No.	Topic	Contents	Remarks (if any)
1	HSK-1, CHAPTER#11	现在几点 What's the time now?	
2	HSK-1, CHAPTER#12	明天天气怎么样 What will the weather be like tomorrow?	
3	HSK-1, CHAPTER#13	他在学做中国菜吃 He is learning to cook Chinese food.	
4	HSK-1, CHAPTER#14	他买了不少衣服 She has bought quite a few clothes.	
5	HSK-1, CHAPTER#15	我是坐飞机来的 I came here by airplane	
6	HSK-2, CHAPTER-1	九月去北京旅游最好 September Is the Best Time to Visit China	
7	HSK-2, CHAPTER-2	2 我每天六点起床 I get up at six every day.	
8	HSK-2, CHAPTER-3	左边那个红色的是我的 The Red One on the Left Is Mine	
9	HSK-2, CHAPTER-4	这个工作是他帮我介绍的 He Recommended me for this Job	
10	HSK-2, CHAPTER-5	就买这件吧 Take this One!	

TEXTBOOKS (Book Name, Authors, edition, Publisher, Year)

1. Standard Course HSK-02, Jiang Liping, Beijing Language and Culture University Press, 2013

NED University of Engineering and Technology, Karachi.

Department CS&IT
Program (BS Computer Science)



F/QSP 11/17/00

Course Profile

COURSE LEARNING OUTCOME AND ITS MAPPING WITH PROGRAMME LEARNING OUTCOME

Sr. No.	CLOs	Taxonomy level	Programme learning outcome (PLO)
At the end of the course, the student will be able to:			
1.	Recognize Chinese orthography (Pinyin and basic Characters) and infer the meaning of basic texts.	C2	Communication
2.	Identify advanced Chinese words and morphemes along with advanced grammatical forms.	C2	Communication
3.	Reproduce advance statements and questions in writing and conversations on a variety of everyday topics.	C2	Communication

REMARKS (if any):

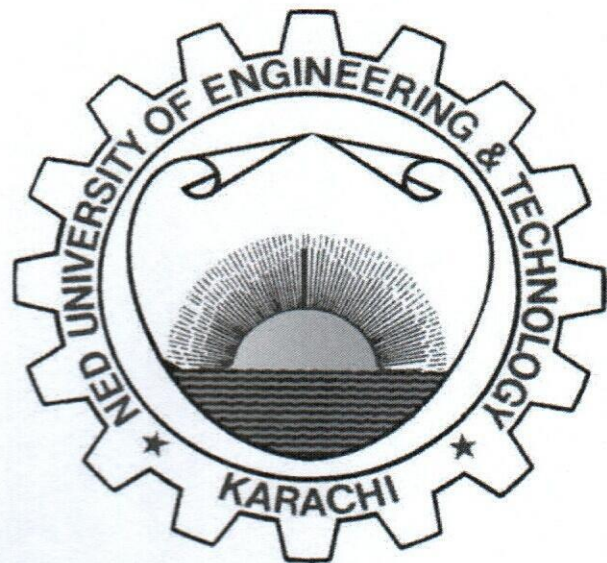
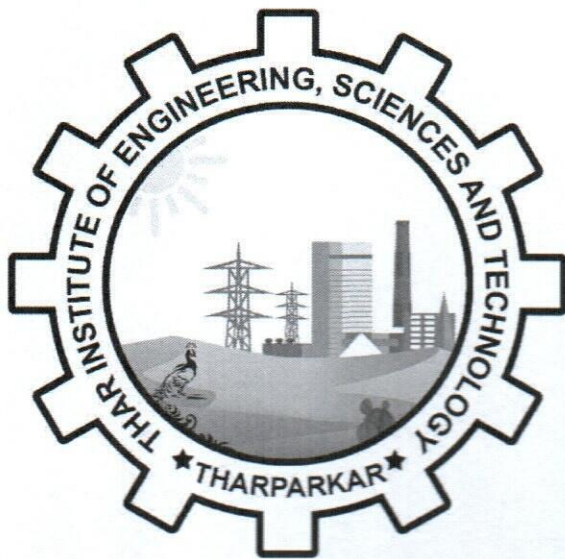
Recommended by : Prof. Dr. Sajida Zaki

(Chairperson HSD/23-06-2022)

Approved by : _____

(Dean/Date)

16.12.2022



Thar Institute of Engineering Sciences and Technology
A Constituent College of NED University of Engineering & Technology

Course Profile

Spring Semester Second Year

Department of Computer Science & Information Technology
Bachelor of Science in Computer Science

NED University of Engineering and Technology

Department CS&IT
Program BS (Computer Science)



F/QSP 11/17/01

Course Profile

COURSE CODE & TITLE CS-252 Computer Architecture & Organization	SEMESTER ■ SPRING □ FALL	CREDIT HOURS TH ■3 □2 □1 □0 PR □3 □2 ■1 □0	
PREREQUISITE COURSE(S) CS-251 Logic Design & Switching Theory	DATE OF COURSE CONTENT APPROVAL 27/03/2019	APPLIED FROM BATCH 2021	
COURSE CONTENTS Computer Evolution, Historical developments, System Buses, RAM, Access Methods, Performance Parameters, Cache Memory, Replacement Algorithms, Mapping Functions, Input & Output, I/O Modules. DMA, Computer Automatic Instruction sets: Characteristics and Function, RISC Control Unit Operation.			
COURSE LEARNING OUTCOME AND ITS MAPPING WITH PROGRAMME LEARNING OUTCOME			
Sr. No.	CLOs	Taxonomy level	Programme learning outcome (PLO)
At the end of the course, the student will be able to:			
1	Understand the organization of a modern computer system.	C-2	PLO-1
2	Understand the internal organization of a computer system using machine language.	C-3	PLO-3
3	Apply concepts and skills to solve real life problems using a low level programming language.	C-3	PLO-5
REMARKS (if any):			

Recommended by: _____

(Chairperson/Date)

Approved by: _____

(Dean/Date)

NED University of Engineering and Technology

Department CS&IT
Program BS (Computer Science)



F/QSP 11/17/01

Course Profile

COURSE CODE & TITLE CT-257 Database Management Systems	SEMESTER ■ SPRING □ FALL	CREDIT HOURS TH ■3 □2 □1 □0 PR □3 □2 ■1 □0	
PREREQUISITE COURSE(S) -NIL-	DATE OF COURSE CONTENT APPROVAL 27/03/2019	APPLIED FROM BATCH 2021	
COURSE CONTENTS File structures and file testing methods sequential, random and indexed sequential methods. Relational, Networks and Hierarchical data models, Organization, storage and retrieval methods. Functional dependency and normalization of database. Query processing and manipulation. Practical assignments and a project.			
COURSE LEARNING OUTCOME AND ITS MAPPING WITH PROGRAMME LEARNING OUTCOME			
Sr. No.	CLOs	Taxonomy level	Programme learning outcome (PLO)
At the end of the course, the student will be able to:			
1	Explain fundamental database concepts	C-2	PLO-1
2	Design conceptual, logical and physical database schemas by normalizing database.	C-5	PLO-4
3	Use Structured Query Language (SQL) for database definition and manipulation in any DBMS.	C-3	PLO-5
REMARKS (if any):			

Recommended by: _____

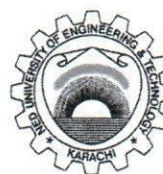
(Chairperson/Date)

Approved by: _____

(Dean/Date)

NED University of Engineering and Technology

Department CS&IT
Program BS (Computer Science)



F/QSP 11/17/01

Course Profile

COURSE CODE & TITLE HS-219 Professional Ethics	SEMESTER <input checked="" type="checkbox"/> SPRING <input type="checkbox"/> FALL	CREDIT HOURS TH <input type="checkbox"/> 3 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> 0 PR <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 0	
PREREQUISITE COURSE(S) - NEL -	DATE OF COURSE CONTENT APPROVAL 27/03/2019	APPLIED FROM BATCH 2021	
COURSE CONTENTS Introduction to Professional & Engineering Ethics: Definitions - Ethics, Professional Ethics, Engineering Ethics, Business Ethics; Ethics & Professionalism. Need and scope of Engineering and Professional Ethics through case studies; Development of Engineering Ethics & Major issues in Engineering & Professional Ethics; Moral Reasoning & Ethical Frameworks: Ethical Dilemma; Resolving Ethical dilemmas and making Moral Choices; Codes of Ethics (of local and international professional bodies). Moral Theories: Utilitarianism, Rights Ethics and Duty Ethics, Virtue Ethics Self-Realization & Self Interest; Ethical Problem Solving Techniques: Line drawing, flow Charting, Conflict Problems; case studies and applications; Contemporary Professional Ethics: Professional Responsibilities; Risk and Safety as an Ethical Concern for Engineers, Workplace Responsibilities and Ethics: Teamwork, confidentiality and conflicts of interest, Whistleblowing, Bribe and gift, risk and cost - benefit analyses, gender discrimination and sexual harassment; Environmental Ethics; Computer Ethics & the Internet; Honesty: Truthfulness, trustworthiness, academic and research integrity.			
COURSE LEARNING OUTCOME AND ITS MAPPING WITH PROGRAMME LEARNING OUTCOME			
Sr. No.	CLOs	Taxonomy level	Programme learning outcome (PLO)
At the end of the course, the student will be able to:			
1	Discuss the contemporary frameworks of professional and engineering ethics in the light of ethical theories and dilemmas.	C-2	PLO-9
2	Apply principles, theories, and codes of ethics in situations related to professional practice.	C-3	PLO-9
3	Value professional, aspirational, and collective ethics for continual professional development	A-3	PLO-9
REMARKS (if any):			

Recommended by: _____

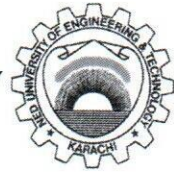
(Chairperson/Date)

Approved by: _____

(Dean/Date)

NED University of Engineering and Technology

Department CS&IT
Program BS (Computer Science)



F/QSP 11/17/01

Course Profile

COURSE CODE & TITLE CT-258 Financial and Cost Accounting	SEMESTER ■ SPRING □ FALL	CREDIT HOURS TH ■3 □2 □1 □0 PR □3 □2 □1 ■0	
PREREQUISITE COURSE(S) - NIL -	DATE OF COURSE CONTENT APPROVAL 27/03/2019	APPLIED FROM BATCH 2021	
COURSE CONTENTS Structure of accounting, classification of accounting frameworks, Accounting principles, Accounting Cycle, Preparation and use of worksheet, the concept and procedures of adjusting, reversing and closing entries, preparation and analysis of classified and incorporated financial statements. Basic concepts of Cost Accounting, types of cost, cost assignments, costing methods, budgeting and planning, standard cost and variance analysis. Job order costing, process costing, ABC and JIT techniques, material, labour and overhead costing.			
COURSE LEARNING OUTCOME AND ITS MAPPING WITH PROGRAMME LEARNING OUTCOME			
Sr. No.	CLOs	Taxonomy level	Programme learning outcome (PLO)
At the end of the course, the student will be able to:			
1	Define accounting and explain its history	C-1	PLO-2
2	Identify fundamental concepts of Generally Accepted Accounting Principles	C-2	PLO-3
3	Prepare financial statements using an adjusted trial balance	C-3	PLO-4
REMARKS (if any):			

Recommended by: _____

(Chairperson/Date)

Approved by: _____

(Dean/Date)

NED University of Engineering and Technology

Department CS&IT
Program BS (Computer Science)



F/QSP 11/17/01

Course Profile

COURSE CODE& TITLE MT-272 Linear Algebra & Geometry	SEMESTER ■ SPRING □ FALL	CREDIT HOURS TH ■3 □2 □1 □0 PR □3 □2 □1 ■0																
PREREQUISITE COURSE(S) - NIL -	DATE OF COURSE CONTENT APPROVAL 27/03/2019	APPLIED FROM BATCH 2021																
COURSE CONTENTS <p>Linear Algebra; Linearity and linear dependence of vectors, basis, dimension of a vector space, field matrix and type of matrices (singular, non-singular, symmetric, non-symmetric, upper, lower, diagonal tri-diagonal matrix), Rank of a matrix using row operations and special method, echelon and reduced echelon forms of a matrix, determination of consistency of a system of linear equation using rank, transitions matrix. Euclidean Spaces and Transformation; Geometric representation of vector, norm of vector, Euclidean inner product, projections and orthogonal projections, Euclidean n spaces n properties Cauchy-Schwarz inequality, Euclidean transformations apply geometric transformations to plane figure, composition of transformations. Application of Linear Algebra; Leontief Economic models, Electrical Networks, Scaling, translation, rotation, and projection etc. Eigen Values & Eigen Spaces; Interpret eigen vectors and eigen values of a matrix in terms of transformation it represents, convert a transformation into a matrix eigen value problem, find the eigen values and eigen vectors of order not more than 3x3 matrices algebraically, determine the modal matrix for a given matrix, reduce a matrix to diagonal form and Jordan form, state the Cayley-Hamilton theorem and use it to find powers and the inverse of a matrix, use appropriate software to compute the eigen values and eigen vectors of a matrix, Define quadratic form and determine its nature using eigen values. Solid Geometry; Coordinate Systems in three dimensions. Direction cosines and ratios, vector equation of a straight line, plane and sphere, curve tracing of a function of two and three variables, Surfaces of revolutions, Transformations (Cartesian to polar)</p>																		
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REMARKS (if any):																		

Recommended by: _____

(Chairperson/Date)

Approved by: _____

(Dean/Date)

NED University of Engineering and Technology

Department of Computer Science & IT
Program Computer Science



F/QSP 11/17/01

Course Profile

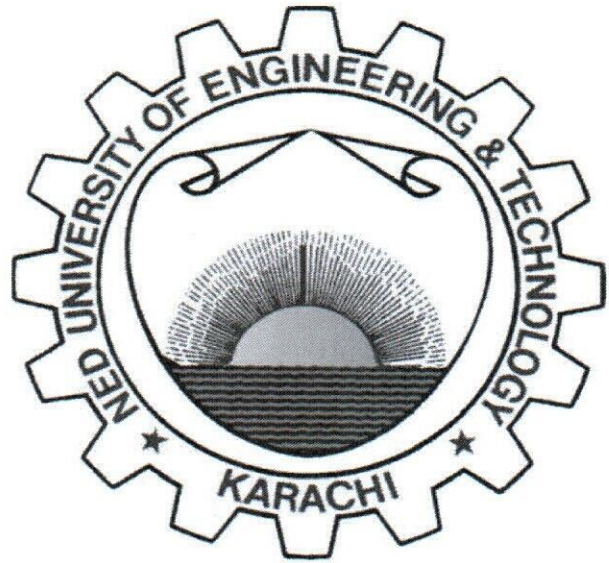
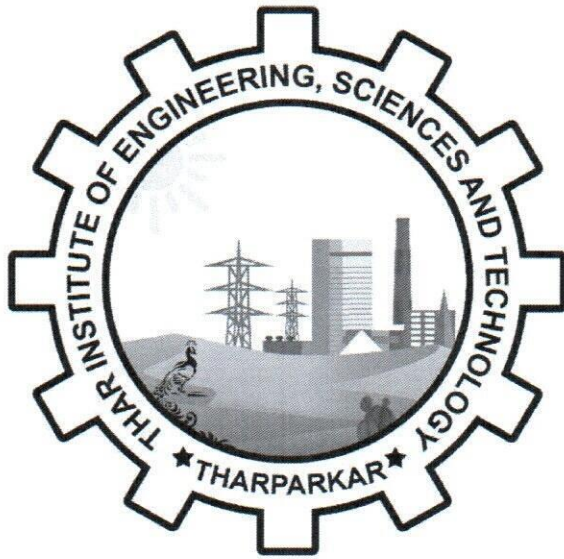
COURSE CODE& TITLE HS-200 Community Service	SEMESTER ■ SPRING □ FALL	CREDIT HOURS TH ■3 □2 □1 □0 PR □3 □2 □1 ■0	
PREREQUISITE COURSE(S) -NIL-	DATE OF COURSE CONTENT APPROVAL	APPLIED FROM BATCH 2021	
COURSE CONTENTS			
COURSE LEARNING OUTCOME AND ITS MAPPING WITH PROGRAMME LEARNING OUTCOME			
Sr. No.	CLOs	Taxonomy level	Programme learning outcome (PLO)
At the end of the course, the student will be able to:			
1	Express an interest in contributing to the community and society individually and collectively through social projects.	A3	PLO-8
2	Volunteer to help make a difference to a specific group, community, or organization.	A2	PLO-10
REMARKS (if any):			

Recommended by: _____

(Chairperson/Date)

Approved by: _____

(Dean/Date)



Thar Institute of Engineering Sciences and Technology
A Constituent College of NED University of Engineering & Technology

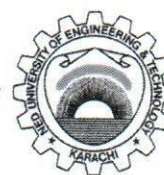
Course Profile

Fall Semester Third Year

Department of Computer Science & Information Technology
Bachelor of Science in Computer Science

NED University of Engineering and Technology

Department CS&IT
Program BS (Computer Science)



F/QSP 11/17/01

Course Profile

COURSE CODE & TITLE CT-365 Software Engineering	SEMESTER <input type="checkbox"/> SPRING <input checked="" type="checkbox"/> FALL	CREDIT HOURS TH <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> 0 PR <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 0																				
PREREQUISITE COURSE(S) -NIL-	DATE OF COURSE CONTENT APPROVAL 27/03/2019	APPLIED FROM BATCH 2021																				
COURSE CONTENTS Evolving role of Software, Definition and need of Software Engineering, Software Development Process, Software Process Models, Project Management concepts – People, Problem and Process, Software project estimations concepts & techniques. Metrics concepts types and their role, Software Quality Assurance, Introduction to Software testing concepts, Brief comparison of conventional methods for Software Engineering and new methods such as Object Oriented Software Engineering.																						
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REMARKS (if any):																						

Recommended by: _____

(Chairperson/Date)

Approved by: _____

(Dean/Date)

NED University of Engineering and Technology

Department CS&IT
Program BS (Computer Science)



F/QSP 11/17/01

Course Profile

COURSE CODE & TITLE CT-353 Operating Systems	SEMESTER <input type="checkbox"/> SPRING <input checked="" type="checkbox"/> FALL	CREDIT HOURS TH <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> 0 PR <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 1 <input type="checkbox"/> 0	
PREREQUISITE COURSE(S) CT-159 Data Structures Algorithms & Applications	DATE OF COURSE CONTENT APPROVAL 27/03/2019	APPLIED FROM BATCH 2021	
COURSE CONTENTS Introduction to Operating System, Operating System Structure; Concurrent Processes; CPU Scheduling; Deadlocks, Memory Management; Virtual Memory; File System; Emphasis on Character Base OS (i.e., Dos and UNIX).			
COURSE LEARNING OUTCOME AND ITS MAPPING WITH PROGRAMME LEARNING OUTCOME			
Sr. No.	CLOs	Taxonomy level	Programme learning outcome (PLO)
At the end of the course, the student will be able to:			
1	Describe the concepts, structure and design of operating systems.	C2	PLO-1
2	Analyse operating system design and its impact on application design and performance.	C4	PLO-3
3	Apply design and development principles in the construction of Operating Systems Components.	C3	PLO-3
REMARKS (if any):			

Recommended by: _____

(Chairperson/Date)

Approved by: _____

(Dean/Date)

NED University of Engineering and Technology

Department CS&IT
Program BS (Computer Science)



F/QSP 11/17/01

Course Profile

COURSE CODE & TITLE CT-363 Design & Analysis of Algorithms	SEMESTER <input type="checkbox"/> SPRING <input checked="" type="checkbox"/> FALL	CREDIT HOURS TH <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> 0 PR <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 0																				
PREREQUISITE COURSE(S) CT-159 Data Structure Algorithms & Applications	DATE OF COURSE CONTENT APPROVAL 27/03/2019	APPLIED FROM BATCH 2021																				
COURSE CONTENTS Introduction; Asymptotic notations; Recursion and recurrence relations; Divide-and-conquer approach; Sorting; Search trees; Heaps; Hashing; Graph algorithms; Shortest paths; Network flow; Disjoint Sets; Polynomial and matrix calculations; Classes of Efficient Algorithms; Divide and Conquer, Dynamic Programming, Greedy Algorithms, Branch and Bound, String Matching algorithms; NP-complete problems; Approximation algorithms.																						
COURSE LEARNING OUTCOME AND ITS MAPPING WITH PROGRAMME LEARNING OUTCOME <table border="1"> <thead> <tr> <th>Sr. No.</th> <th>CLOs</th> <th>Taxonomy level</th> <th>Programme learning outcome (PLO)</th> </tr> </thead> <tbody> <tr> <td colspan="4">At the end of the course, the student will be able to:</td> </tr> <tr> <td>1</td> <td>Understand the algorithm design & complexity</td> <td>C-1</td> <td>PLO-1</td> </tr> <tr> <td>2</td> <td>Understand various techniques of designing algorithms</td> <td>C-2</td> <td>PLO-2</td> </tr> <tr> <td>3</td> <td>Analyze different algorithmic techniques to select appropriate solutions for real world problems</td> <td>C-4</td> <td>PLO-3</td> </tr> </tbody> </table>			Sr. No.	CLOs	Taxonomy level	Programme learning outcome (PLO)	At the end of the course, the student will be able to:				1	Understand the algorithm design & complexity	C-1	PLO-1	2	Understand various techniques of designing algorithms	C-2	PLO-2	3	Analyze different algorithmic techniques to select appropriate solutions for real world problems	C-4	PLO-3
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REMARKS (if any):																						

Recommended by: _____

(Chairperson/Date)

Approved by: _____

(Dean/Date)

NED University of Engineering and Technology

Department CS&IT
Program BS Computer Science

Course Profile



F/QSP 11/17/01

COURSE CODE& TITLE MT-331	SEMESTER <input type="checkbox"/> SPRING <input checked="" type="checkbox"/> FALL	CREDIT HOURS TH <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> 0 PR <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 0																
PREREQUISITE COURSE(S) NIL -NIL-	DATE OF COURSE CONTENT APPROVAL 27/03/2019	APPLIED FROM BATCH 2021																
COURSE CONTENTS <p>STATISTICS: Introduction, Types of data & variables, presentation to data, object, classifications, Tabulation, Frequency distribution, Graphical representation, Simple & Multiple Bar diagrams, Sartorial & Pie-Diagram, Histogram, Frequency Polygon, Frequency Curves & their types.</p> <p>MEASURES OF CENTRAL TENDENCY AND DISPERSION: Statistics Averages, Median Mode, Quartiles, Range, Moments, Skew ness & Kurtosis, Quartile Deviation, Mean Deviation, Standard Deviation, Variance & its coefficient, Practical Significance in related problems.</p> <p>CURVE FITTING: Introduction, fitting of a first- and second-degree curve, fitting of exponential and logarithmic curves, related problems. Principle of least squares, Second order Statistics & Time series not in bit detail.</p> <p>SIMPLE REGRESSION & CORRELATION: Introduction, Scatter diagrams, Correlation & its Coefficient, Regression lines, Rank Correlation & its Coefficient, Probable Error (P.E), Related problems.</p> <p>SAMPLING AND SAMPLING DISTRIBUTIONS: Introduction, Population, Parameter & Statistic, Objects of sampling, Sampling distribution of Mean, Standard errors, Sampling & Non-Sampling Errors, Random Sampling, Sampling with & without replacement, Sequential Sampling, Central limit theorem with practical significance in related problems.</p> <p>STATISTICAL INFERENCE AND TESTING OF HYPOTHESIS: Introduction, Estimation, Types of Estimates, Confidence interval, Tests of Hypothesis, ChiSquare distribution/test, one tails & two tails tests. Application in related problems.</p> <p>PROBABILITY: Basic concepts, Permutation & Combination, Definitions of probability, Laws of probability. Conditional probability, Baye's rule. Related problems in practical significance.</p> <p>RANDOM VARIABLES: Introduction, Discrete & Continuous random variables, Random Sequences and transformations. Probability distribution, Probability density function, Distribution function, Mathematical expectations, Moment Generating Function (M.G.F.), Markove random walks chain/ Related problems.</p> <p>PROBABILITY DISTRIBUTIONS: Introduction, Discrete probability distributions, Binomial Poisson, Hyper geometric & Negative binomial distributions. Continuous probability distribution, Uniform, Exponential & Normal distributions & their practical significance.</p>																		
COURSE LEARNING OUTCOME AND ITS MAPPING WITH PROGRAMME LEARNING OUTCOME <table border="1"> <thead> <tr> <th>Sr. No.</th> <th>CLOs</th> <th>Taxonomy level</th> <th>Programme learning outcome (PLO)</th> </tr> </thead> <tbody> <tr> <td colspan="4">At the end of the course, the student will be able to:</td> </tr> <tr> <td>1.</td> <td>Discuss the fundamental concept in Probability and Statistics.</td> <td>C-2</td> <td>PLO-2</td> </tr> <tr> <td>2.</td> <td>Analyze data to produce mathematical or probabilistic model in relevant engineering problems.</td> <td>C-4</td> <td>PLO-3</td> </tr> </tbody> </table>			Sr. No.	CLOs	Taxonomy level	Programme learning outcome (PLO)	At the end of the course, the student will be able to:				1.	Discuss the fundamental concept in Probability and Statistics.	C-2	PLO-2	2.	Analyze data to produce mathematical or probabilistic model in relevant engineering problems.	C-4	PLO-3
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REMARKS (if any):																		

Recommended by: _____

(Chairperson/Date)

Approved by: _____

(Dean/Date)

NED University of Engineering and Technology

Department CS&IT
Program BS (Computer Science)



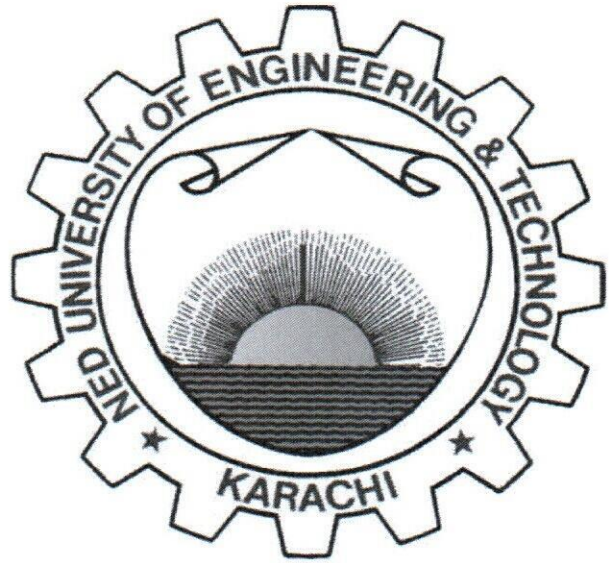
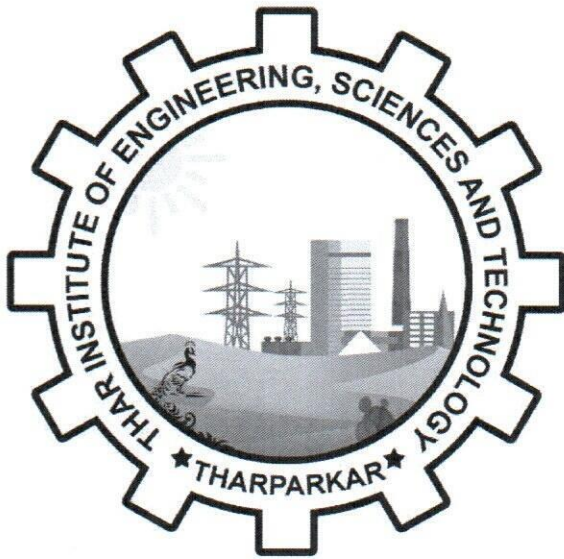
F/QSP 11/17/01

Course Profile

COURSE CODE & TITLE CT-364 Theory of Automata and Formal Languages. -NIL-	SEMESTER <input type="checkbox"/> SPRING <input checked="" type="checkbox"/> FALL	CREDIT HOURS TH <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> 0 PR <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 0	
PREREQUISITE COURSE(S)	DATE OF COURSE CONTENT APPROVAL 27/03/2019	APPLIED FROM BATCH 2021	
COURSE CONTENTS Finite State Models, Formal Languages, Regular Expressions, Regular languages, Finite automata (FAs), Transition graphs (TGs), Deterministic and Non-Deterministic Finite automata, Kleene's theorem, Transducers (automata with output), Pumping lemma and non regular language Grammars, Pushdown Automata (PDA), Context free grammars, Derivations, ambiguity in grammars, Parse Trees, Normal form grammars, Decidability, Context sensitive languages, Chomsky's hierarchy of grammars, Turing Machines.			
COURSE LEARNING OUTCOME AND ITS MAPPING WITH PROGRAMME LEARNING OUTCOME			
Sr. No.	CLOs	Taxonomy level	Programme learning outcome (PLO)
At the end of the course, the student will be able to:			
1	Explain the different concepts in automata theory and formal languages including Turing machines.	C-1	PLO-1
2	Construct automata, RE and CFG	C-3	PLO-2
3	Transform between equivalent NFAs, DFAs and REs	C-4	PLO-3
REMARKS (if any):			

Recommended by: 
(Chairperson/Date)

Approved by:  10.11.2022
(Dean/Date)



Thar Institute of Engineering Sciences and Technology
A Constituent College of NED University of Engineering & Technology

Course Profile

Spring Semester Third Year

Department of Computer Science & Information Technology
Bachelor of Science in Computer Science

NED University of Engineering and Technology

Department CS&IT
Program BS (Computer Science)



F/QSP 11/17/01

Course Profile

COURSE CODE & TITLE CT-465 Compiler Design	SEMESTER <input checked="" type="checkbox"/> SPRING <input type="checkbox"/> FALL	CREDIT HOURS TH <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> 0 PR <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 0	
PREREQUISITE COURSE(S) CT-364 Theory of Automata and Formal Languages	DATE OF COURSE CONTENT APPROVAL 27/03/2019	APPLIED FROM BATCH 2021	
COURSE CONTENTS Input and Lexical Analysis; Syntax Analysis. Type Checking. Intermediate Code Generation. Code Generation. Code optimization. Working Problems in Compiler Design.			
COURSE LEARNING OUTCOME AND ITS MAPPING WITH PROGRAMME LEARNING OUTCOME			
Sr. No.	CLOs	Taxonomy level	Programme learning outcome (PLO)
At the end of the course, the student will be able to:			
1.	Describe the architecture of a compiler, and function of its components.	C-1	PLO-2
2.	Design lexical and syntax analyzers by using various algorithms.	C-5	PLO-4
3.	Apply appropriate formal notations to define a programming language.	C-3	PLO-3
REMARKS (if any):			

Recommended by: _____

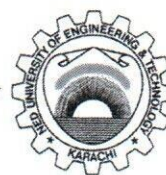
(Chairperson/Date)

Approved by: _____

(Dean/Date)

NED University of Engineering and Technology

Department CS&IT
Program BS (Computer Science)



F/QSP 11/17/01

Course Profile

COURSE CODE& TITLE CT-361 Artificial Intelligence & Expert System	SEMESTER ■ SPRING □ FALL	CREDIT HOURS TH ■3 □2 □1 □0 PR □3 □2 ■1 □0																				
PREREQUISITE COURSE(S) NIL	DATE OF COURSE CONTENT APPROVAL 27/03/2019	APPLIED FROM BATCH 2021																				
COURSE CONTENTS <p>Introduction to Artificial Intelligence, Branches of AI Application of AI knowledge, types of knowledge, acquisition of knowledge, Knowledge engineering. Problem representation and problem solving strategic, state spaces, searching techniques. Blind search techniques. Informed search techniques. Knowledge representation techniques. Frames, Scripts, Semantic networks. Implementation of knowledge representation using PROLOG. Fundamental of Expert System. Component of Expert System Developments, Cycle of Expert System. Case studies Elize, Mycin. Natural language processing, Speech processing, Introduction to Robotics, Computer vision, Neural Networks, and Machine learning.</p>																						
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REMARKS (if any):																						

Recommended by: _____

(Chairperson/Date)

Approved by: _____

(Dean/Date)

NED University of Engineering and Technology

Department CS&IT
Program BS (Computer Science)



Course Profile

F/QSP 11/17/01

COURSE CODE & TITLE (CT-362) Web Engineering	SEMESTER <input checked="" type="checkbox"/> SPRING <input type="checkbox"/> FALL	CREDIT HOURS TH <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> 0 PR <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 1 <input type="checkbox"/> 0
PREREQUISITE COURSE(S) CT-175 Programming Fundamentals	DATE OF COURSE CONTENT APPROVAL 27/03/2019	APPLIED FROM BATCH 2021

COURSE CONTENTS

WWW Technology: Internet and WWW History; The Internet and Intranets; Web Browsers & Web Servers; Web Application; URLs and navigation; TCP/IP and ports; HTTP Interaction; Client Request and Server Response; MIME; The Dynamic HTTP Protocol; Static vs. Dynamic Content; 3-Tier/n-Applications. Web Site-Planning and Development: Web-site Goals; Planning Stages; Content Development; Site Map Development; Web-Site Design Principles; Style Guides; Web-Site Hosting; Web-Site Design Tools; Web Page Programming Tools; Data Processing Tools; Maintaining and Monitoring the Web-Site. Client Side Programming: HTML and DHTML – Tags, Linking, Forms, Event, Dynamic Style, Positioning; Document Object Model; Client Side Scripting Language: Java Script / VBScript; Browsers Variations; Java Script / VBScript Samples; Embedding Multimedia in Web Pages; Using ActiveX in Web. Server Side Programming: Server Side Scripting Language; Web Server Configuration; Java / Active Server – Page Processing, Cookies, Built-in Objects; Web database access; ODBC and JDBC; Active Data Objects; Database Queries-SQL; Data Exchange and Interoperability – XML; Concepts of Multimedia: Multimedia Hardware – Input and Capturing Devices, Output Devices Communication Devices; Text Image Animation, Sound and Video; Text in Multimedia TTF, OTF; Image in Multimedia – Color Types, Compression File Formats; Sound in Multimedia – Recording Sound, Quality, MIDI, Digital Sound, File Formats: WAV, MP3; Video in Multimedia – Broadcast Standards, Digital Video, Compression, Recording Formats, File Formats. Web Tools: Site Builders- Dreamweaver: Introduction, Working with Layers, Tables, Images, Forms and Frames, CSS, Site Navigation, Web Animation, File Transference-Cute FTP; Configuring web-site, Logs, Searching Transferring files, Stopping and Resuming, Scheduling. Multimedia Tools: Fontlab: Creating Font, Encoding Glyphs, Transformation, Hinting, Editing Font Metrics, Exporting, Image Drawing and Editing Tools, Sound Editing Tools, Video Editing Tools.

COURSE LEARNING OUTCOME AND ITS MAPPING WITH PROGRAMME LEARNING OUTCOME

Sr. No.	CLOs	Taxonomy level	Programme learning outcome (PLO)
At the end of the course, the student will be able to:			
1	Explain the need of Web Engineering approaches for Web Application Development.	C2	PLO-2
2	Apply appropriate Client and Server-Side Techniques and Technologies for Web Application Development.	C3	PLO-4
3	Practice the use of modern tools and techniques for Web Application Development.	P3	PLO-5

REMARKS (if any):

Recommended by: _____

(Chairperson/Date)

Approved by: _____

(Dean/Date)

NED University of Engineering and Technology

Department CS&IT

Program BS (Computer Science)



F/QSP 11/17/01

Course Profile

COURSE CODE & TITLE CT-367 – Theory of Programming Languages	SEMESTER ■ SPRING □ FALL	CREDIT HOURS TH ■3 □2 □1 □0 PR □3 □2 □1 ■0	
PREREQUISITE COURSE(S) CT-175 – Programming Fundamentals	DATE OF COURSE CONTENT APPROVAL 27/03/2019	APPLIED FROM BATCH 2021	
COURSE CONTENTS Models of Computation. Syntax and Semantics. Pragmatics, Language Design Principles. Syntax and Semantics: Context-Free Grammars Regular Expressions, Attribute Grammars and Static Semantics, Algebraic semantics, Axiomatic Semantics, Denotational Semantics. BNF grammars and Syntax, Operational Equivalence, Abstraction and Generalization, Expressions, Assignment Statement, and Control Structures. Functional Programming: The Lambda Calculus, Recursive Functions, Inference Engine, Concurrency.			
COURSE LEARNING OUTCOME AND ITS MAPPING WITH PROGRAMME LEARNING OUTCOME			
Sr. No.	CLOs	Taxonomy level	Programme learning outcome (PLO)
At the end of the course, the student will be able to:			
1	Explain the underlying theory of programming languages.	C-2	PLO-1
2	Enable a student to apply the appropriate Language for a Project.	C-3	PLO-2
3	Practice to learn the formal lexical, syntax and semantics design for programming languages.	C-3	PLO-10
REMARKS (if any):			

Recommended by: _____

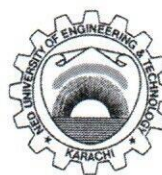
(Chairperson/Date)

Approved by: _____

(Dean/Date)

NED University of Engineering and Technology

Department **CS&IT**
Program **BS (Computer Science)**



F/QSP 11/17/01

Course Profile

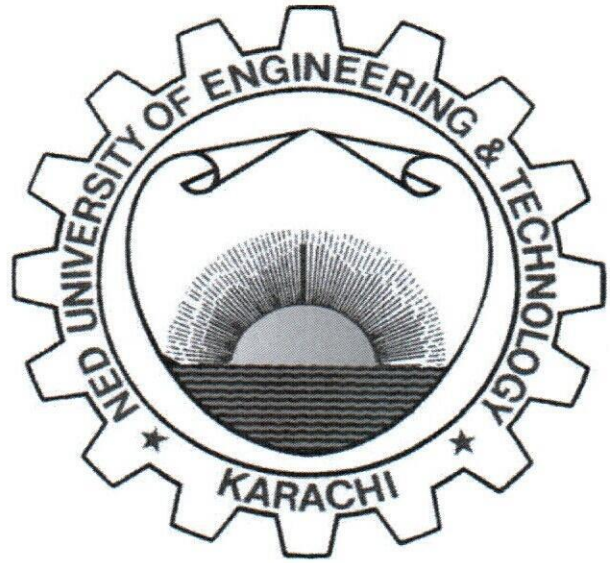
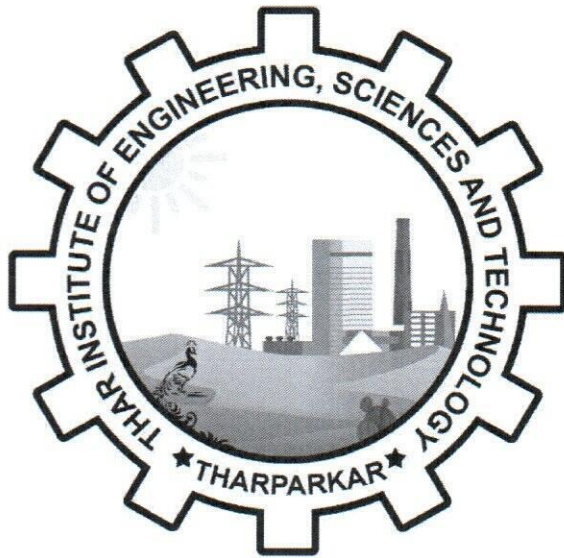
COURSE CODE& TITLE MT-442 Numerical Methods	SEMESTER ■ SPRING □ FALL	CREDIT HOURS TH ■3 □2 □1 □0 PR □3 □2 □1 ■0																				
PREREQUISITE COURSE(S) -NIL-	DATE OF COURSE CONTENT APPROVAL 27/03/2019	APPLIED FROM BATCH 2018																				
COURSE CONTENTS <p>Error analysis: types of errors (relative, absolute, inherent, round off, truncation), significant digits and numerical instability, flow chart, use any computational tools to analysis the numerical solutions. linear operators: functions of operators, difference operators and the derivative operators, identities, difference equations: linear homogeneous and non-homogeneous difference equations, solution of non-linear equations: numerical methods for finding the roots of transcendental and polynomial equations (secant, Newton – Raphson Chebyshev and graeffe's root squaring methods), rate of convergence and stability of an iterative method, solution of linear equations: numerical methods for finding the solutions of system of linear equations (gauss-elimination, gauss-jordan elimination, triangularization, cholesky, jacobi and gauss seidel), interpolation &- curve fitting lagrange's, newton, hermit, spline, least squares approximation, (linear and non-linear curves), numerical integration & differentiation: computation of integrals using simple trapezoidal rule, 1/3thsimpson's rule, 3/8th simpson's rule, composite simpson's and trapezoidal rules, computation of solutions of differential equations using (Euler method, Euler modified method, Rungekutta method of order 4), numerical solutions of partial differential equations, optimization problem (simplex method), steepest ascent and steepest descent methods.</p>																						
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REMARKS (if any):																						

Recommended by: _____

(Chairperson/Date)

Approved by: _____

(Dean/Date)



Thar Institute of Engineering Sciences and Technology
A Constituent College of NED University of Engineering & Technology

Course Profile

Fall Semester Final Year

Department of Computer Science & Information Technology
Bachelor of Science in Computer Science

NED University of Engineering and Technology

Department CS&IT
Program BS (Computer Science)



F/QSP 11/17/01

Course Profile

COURSE CODE& TITLE CT-460 Network & Information Security	SEMESTER <input type="checkbox"/> SPRING <input checked="" type="checkbox"/> FALL	CREDIT HOURS TH <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> 0 PR <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 1 <input type="checkbox"/> 0																				
PREREQUISITE COURSE(S) CS-351: Computer Communication Networks	DATE OF COURSE CONTENT APPROVAL 27/03/2019	APPLIED FROM BATCH 2021																				
COURSE CONTENTS <p>Introduction to simple Cryptosystems and their Cryptanalysis: Shift, Substitution, Affine, Vigenere, Hill, Permutation and stream ciphers. Shannon's Theory: Elementary Probability theory, entropy, perfect secrecy, unicity distance. Block Ciphers and Advance Encryption Standard, Chaining; Substitution-permutation networks, Feistel networks; Linear cryptanalysis of an SPN. Cryptographic hash functions: Security requirements, collisions; Security uses: passwords, message and data integrity, notaries; MD5, SHA; Message authentication codes; Birthday attack. The RSA Cryptosystems: Primes, GCDs and the Extended Euclidean Algorithm, modular exponentiation and inverses, Euler totient function, Euler's theorem, Introduction to public-key cryptography; RAS: basic implementation details. Digital signature schemes: ElGamal, DSA; Elliptic Curve DSA; One-time Signatures, Undeniable Signatures Zero-Knowledge proofs, Bit communication; Pseudorandom number generation. Network communication concepts: Network overview, specific networking protocols, transmission media and networking hardware. Optimizing and fine tuning for performance: Ways to speed up an existing server, Stress testing techniques, Threat of computer crimes. Network security issues: Techniques to increase security, Internet related security issues. Troubleshooting and preventive maintenance: Basic element of troubleshooting, hardware troubleshooting tools, Software troubleshooting tools, Diagnosing real world problems. Troubleshooting the physical network, Troubleshooting WANS.</p>																						
COURSE LEARNING OUTCOME AND ITS MAPPING WITH PROGRAMME LEARNING OUTCOME <table border="1"> <thead> <tr> <th>Sr. No.</th> <th>CLOs</th> <th>Taxonomy level</th> <th>Programme learning outcome (PLO)</th> </tr> </thead> <tbody> <tr> <td colspan="4">At the end of the course, the student will be able to:</td> </tr> <tr> <td>1</td> <td>Be able to understand the traditional encryption, security attacks and the fundamentals of network and information security.</td> <td>C1</td> <td>PLO-1</td> </tr> <tr> <td>2</td> <td>Understand the common principles of network and information security and be able to apply them in a variety of applications.</td> <td>C3</td> <td>PLO-4</td> </tr> <tr> <td>3</td> <td>Be able to implement a practical security solution or understand the need of security in real life.</td> <td>P3 (Guided response, Psychomotor domain)</td> <td>PLO-5</td> </tr> </tbody> </table>			Sr. No.	CLOs	Taxonomy level	Programme learning outcome (PLO)	At the end of the course, the student will be able to:				1	Be able to understand the traditional encryption, security attacks and the fundamentals of network and information security.	C1	PLO-1	2	Understand the common principles of network and information security and be able to apply them in a variety of applications.	C3	PLO-4	3	Be able to implement a practical security solution or understand the need of security in real life.	P3 (Guided response, Psychomotor domain)	PLO-5
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REMARKS (if any):																						

Recommended by: _____

(Chairperson/Date)

Approved by: _____

(Dean/Date)

NED University of Engineering and Technology

Department CS&IT
Program BS (Computer Science)



F/QSP 11/17/01

Course Profile

COURSE CODE& TITLE MG-482 Organizational Behavior	SEMESTER <input type="checkbox"/> SPRING <input checked="" type="checkbox"/> FALL	CREDIT HOURS TH <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> 0 PR <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 0	
PREREQUISITE COURSE(S) - NEL-	DATE OF COURSE CONTENT APPROVAL 27/03/2019	APPLIED FROM BATCH 2021	
COURSE CONTENTS <p>Introduction to Organizational Behaviour: Foundations of OB: Management functions, roles, and skills; Effective versus successful managerial activities; replacing intuition with systematic study. Exploring OB challenges and opportunities facing globalization: Improving quality and productivity; improving people skills; managing work force diversity; responding to globalization; empowering people; stimulating innovation and change; coping with temporariness; handling declining employee loyalty; improving ethical behavior. Foundations of Individual Behaviour: Individuals & Organizations: Biographical traits and ability; and personality. Perceptions and individual decision making: Understanding perception and its significance, factors influencing perception; linking perception and individual decision making; optimizing decision making model; alternative decision making models; issues in decision making. Values, attitudes and job satisfaction: Importance, sources, types of values; sources and types of attitude; attitude and consistency; measuring job satisfaction; determinants of job satisfaction; effect of job satisfaction on employee performance; ways employees can express dissatisfaction. Motivation- basic concepts and applications. Foundations of Group Behaviour: Group in OB: Defining and classifying groups; stages of group development, work group behaviour; dynamics of groups. Understanding work teams: Team versus group; types of teams, creating high performance teams; turning individuals into team players. Communication: communicating at interpersonal and organizational level. Leadership: basic approaches and contemporary issues. Conflict & negotiation: defining conflict; transition in conflict thought; conflict process; negotiation - strategies, process and issues. Foundations of Organizational Structure: Organizational structure and design; work design; work stress. Organizational culture: definition; culture's functions, employees and organizational culture. Organization change and development: forces for change; managing planned change, resistance to change; approaches to managing organizational change.</p>			
COURSE LEARNING OUTCOME AND ITS MAPPING WITH PROGRAMME LEARNING OUTCOME			
Sr. No.	CLOs	Taxonomy level	Programme learning outcome (PLO)
At the end of the course, the student will be able to:			
1	Explain key organizational behavior concepts and its implications.	C2	PLO-10
2	Analyze organizational behavior practices from the perspective of ethical criteria.	C4	PLO-8
3	Express strategies to change individual & group behaviors for organizational success.	A3	PLO-6
REMARKS (if any):			

NED University of Engineering and Technology

Department CS&IT
Program BS (Computer Science)



F/QSP 11/17/01

Course Profile

Recommended by: _____

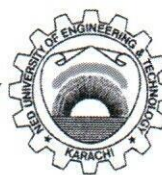
(Chairperson/Date)

Approved by: _____

(Dean/Date)

NED University of Engineering and Technology

Department CS&IT
Program BS (Computer Science)



F/QSP 11/17/01

Course Profile

COURSE CODE& TITLE CT-485 Natural Language Processing	SEMESTER <input type="checkbox"/> SPRING <input checked="" type="checkbox"/> FALL	CREDIT HOURS TH <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> 0 PR <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 0																				
PREREQUISITE COURSE(S) CT-361 Artificial Intelligence & Expert Systems	DATE OF COURSE CONTENT APPROVAL 27/03/2019	APPLIED FROM BATCH 2021																				
COURSE CONTENTS <p>Deterministic and stochastic grammars, Parsing algorithms, CFGs, Representing meaning / Semantics, Semantic roles, Temporal representations, Corpus-based methods, N-grams, HMMs, Smoothing and backoff, POS tagging and morphology, Information retrieval, Vector space model, Precision and recall, Information extraction, Language translation, Text classification, categorization, Bag of words model.</p>																						
COURSE LEARNING OUTCOME AND ITS MAPPING WITH PROGRAMME LEARNING OUTCOME <table border="1"> <thead> <tr> <th>Sr. No.</th> <th>CLOs</th> <th>Taxonomy level</th> <th>Programme learning outcome (PLO)</th> </tr> </thead> <tbody> <tr> <td colspan="4">At the end of the course, the student will be able to:</td> </tr> <tr> <td>1</td> <td>Identify techniques for information extraction, language translation, and text classification.</td> <td>C1</td> <td>PLO-2</td> </tr> <tr> <td>2</td> <td>Understand example cases of corpora for a variety of NLP tasks.</td> <td>C2</td> <td>PLO-3</td> </tr> <tr> <td>3</td> <td>Use appropriate NLP techniques to solve the given case.</td> <td>C3</td> <td>PLO-4</td> </tr> </tbody> </table>			Sr. No.	CLOs	Taxonomy level	Programme learning outcome (PLO)	At the end of the course, the student will be able to:				1	Identify techniques for information extraction, language translation, and text classification.	C1	PLO-2	2	Understand example cases of corpora for a variety of NLP tasks.	C2	PLO-3	3	Use appropriate NLP techniques to solve the given case.	C3	PLO-4
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REMARKS (if any): 																						

Recommended by: _____

(Chairperson/Date)

Approved by: _____

(Dean/Date)

NED University of Engineering and Technology

Department CS&IT
Program BS (Computer Science)



F/QSP 11/17/01

Course Profile

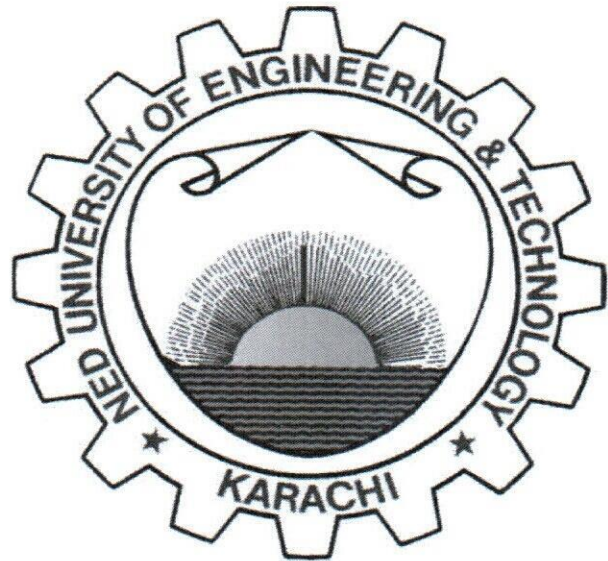
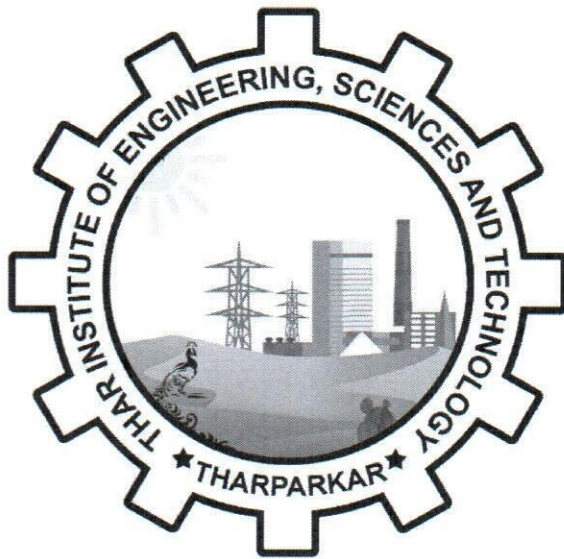
COURSE CODE& TITLE CT-463 Data Warehousing Mining	SEMESTER <input type="checkbox"/> SPRING <input checked="" type="checkbox"/> FALL	CREDIT HOURS TH <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> 0 PR <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 1 <input type="checkbox"/> 0	
PREREQUISITE COURSE(S) None	DATE OF COURSE CONTENT APPROVAL 27/03/2019	APPLIED FROM BATCH 2021 onwards	
COURSE CONTENTS Introducing the Data warehouse; The Data warehouse Methods; Quality Data warehouse process; Data warehouse Methodology; Data warehouse Administration; Performance Management, Managing the Data warehouse, Data warehouse Project Management; Data Handling: Distribution and Transformation; Data Integration and Data Semantics; Data Warehouse Architecture; Metadata, Types of Metadata, control change control in the Data warehouse.			
COURSE LEARNING OUTCOME AND ITS MAPPING WITH PROGRAMME LEARNING OUTCOME			
Sr. No.	CLOs	Taxonomy level	Programme learning outcome (PLO)
At the end of the course, the student will be able to:			
1	Explain the need for creating a data warehouse.	C2	PLO-2
2	Demonstrate the characteristics and architectural components of a data warehouse using example cases.	C3	PLO-3
3	Propose data mining techniques to solve given case studies.	C5	PLO-5
REMARKS (if any):			

Recommended by: _____

(Chairperson/Date)

Approved by: _____

(Dean/Date)



Thar Institute of Engineering Sciences and Technology
A Constituent College of NED University of Engineering & Technology

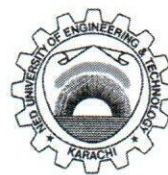
Course Profile

Spring Semester Final Year

Department of Computer Science & Information Technology
Bachelor of Science in Computer Science

NED University of Engineering and Technology

Department CS&IT
Program BS (Computer Science)



F/QSP 11/17/01

Course Profile

COURSE CODE & TITLE CT-351 Computer Communication Networks	SEMESTER ■ SPRING □ FALL	CREDIT HOURS TH ■3 □2 □1 □0 PR □3 □2 ■1 □0																				
PREREQUISITE COURSE(S) -NIL-	DATE OF COURSE CONTENT APPROVAL 27/03/2019	APPLIED FROM BATCH 2021																				
COURSE CONTENTS <p>Introduction to Networking. Networks ISO/OSI reference Model. Performance Models of communication Networks. Design Protocols, Virtual circuit/ datagram. Routing congestion control. Flow control local Networks satellite protocols, Broadcast Networks</p>																						
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Recommended by: _____

(Chairperson/Date)

Approved by: _____

(Dean/Date)

NED University of Engineering and Technology

Department CS&IT
Program BS (Computer Science)



F/QSP 11/17/01

Course Profile

COURSE CODE & TITLE MG-481 Entrepreneurship	SEMESTER ■ SPRING □ FALL	CREDIT HOURS TH ■3 □2 □1 □0 PR □3 □2 □1 ■0	
PREREQUISITE COURSE(S) - NIL -	DATE OF COURSE CONTENT APPROVAL 27/03/2019	APPLIED FROM BATCH 2021	
COURSE CONTENTS Overview of Entrepreneurship, Characteristics in Entrepreneurship, Opportunity recognition, Ideas Generation, Feasibility Analysis, Business Plan, Industry Analysis, Competitor Analysis, Business Model, Financial Management, Team Building, Acquiring financing/ funding, Marketing issues.			
COURSE LEARNING OUTCOME AND ITS MAPPING WITH PROGRAMME LEARNING OUTCOME			
Sr. No.	CLOs	Taxonomy level	Programme learning outcome (PLO)
At the end of the course, the student will be able to:			
1.	Explain basic functions and importance of entrepreneurship	C2	PLO-10
2.	Value business ethics on entrepreneurial activities	A3	PLO-9
3.	Demonstrate the entrepreneurial skills to develop business plan	C3	PLO-7
REMARKS (if any):			

Recommended by: _____

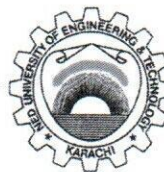
(Chairperson/Date)

Approved by: _____

(Dean/Date)

NED University of Engineering and Technology

Department **CS&IT**
Program **BS (Computer Science)**



F/QSP 11/17/01

Course Profile

COURSE CODE& TITLE CT-366 E-Commerce	SEMESTER <input type="checkbox"/> SPRING <input checked="" type="checkbox"/> FALL	CREDIT HOURS TH <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> 0 PR <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 0
PREREQUISITE COURSE(S) None	DATE OF COURSE CONTENT APPROVAL 27/03/2019	APPLIED FROM BATCH 2021

COURSE CONTENTS

Introducing E-Commerce: E-commerce overview, concepts and business models. Internet Hardware, Software and Communication Internet and World Wide Web servers, storage and communication Technologies. Cloud Computing, Software as a Service (SaaS). E-Commerce Technologies Generic Trade Cycles. Electronic Markets, Electronic Data Interchange, Internet Commerce. E-Commerce with Business Perspective The Value Chain, Competitive Strategy, Inter-Organizational Transactions, Consumer Trade Transactions, the Trade Cycle e-Commerce Sales. SWOT Analysis, Enterprise Resource Planning (ERP), Supply Chain Management (SCM), Customer Relationship Management (CRM). The Elements of E-Commerce E-Visibility, Online Information, Customer Registration, Order Processing, Online Payments, Efulfillment, After-Sales Services. Internet Marketing: Basis Marketing concepts, internet traffic patterns, On-site marketing techniques Online Monetary Transaction: Web Payment Systems, standards and taxation issues. Internet Security: Security Issues and Threats; Security Procedures; Encryption; Digital Certificates; Digital Signature; Security Protocol - SSL and SET Technologies; Authentication and Identification; Security Providers; Privacy Policies; Legal Issues. Customer Service: Customer Service Issues; Frequently Asked Question (FAQ) Pages; E-Mail Support; Telephone Support; Live Help Service; Customer Discussion Forums; Value-Added Options. Legal, Social and Global Issues E-commerce impact on society, Legal, Policy and Ethical issues.

COURSE LEARNING OUTCOME AND ITS MAPPING WITH PROGRAMME LEARNING OUTCOME

Sr. No.	CLOs	Taxonomy level	Programme learning outcome (PLO)
At the end of the course, the student will be able to:			
1	Understand the concepts and standards related to the discipline of E-Commerce.	C2	PLO-2
2	Analyze complex real world problems found in E-Commerce	C3	PLO-3
3	Propose a design of an E-Commerce application for the given case.	C4	PLO-4

REMARKS (if any):

Recommended by: _____

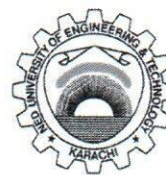
(Chairperson/Date)

Approved by: _____

(Dean/Date)

NED University of Engineering and Technology

Department CS&IT
Program BS (Computer Science)



F/QSP 11/17/01

Course Profile

COURSE CODE & TITLE CT-464 Modeling & Simulation	SEMESTER <input type="checkbox"/> SPRING <input checked="" type="checkbox"/> FALL	CREDIT HOURS TH <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> 0 PR <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 0																								
PREREQUISITE COURSE(S) -NIL-	DATE OF COURSE CONTENT APPROVAL 27/03/2019	APPLIED FROM BATCH 2021																								
COURSE CONTENTS Performance Modeling and Evaluation, Bench Marking, Performance Evaluation of High Parallel Systems Architecture. Application of Performance Evaluation. Measurement Techniques, Hardware Monitoring, Software Monitoring, Hybrid Monitoring Fundamentals of Queuing Models. Structure and performance parameters. Operational Analysis of Queuing Models. General features of Queuing Models. Birth and Death process M/M/1 and M/G/1 systems. Dependability Modeling. Analysis of Reliable, Available and High Assurance systems. Fault-tolerant Techniques. Software Reliability Modeling. Petri Net-Based Performance Modeling. Classical Petri Nets. Discrete, Timed Petri Nets. Generalised Stochastic Petri Nets. Modeling of multiprocessors systems.																										
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Recommended by: _____

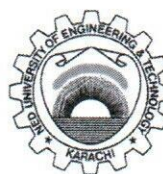
(Chairperson/Date)

Approved by: _____

(Dean/Date)

NED University of Engineering and Technology

Department CS&IT
Program BS (Computer Science)



F/QSP 11/17/01

Course Profile

COURSE CODE& TITLE CT-352 Computer Graphics	SEMESTER ■ SPRING □ FALL	CREDIT HOURS TH ■3 □2 □1 □0 PR □13 □2 ■1 □0	
PREREQUISITE COURSE(S) -NIL-	DATE OF COURSE CONTENT APPROVAL 27/03/2019	APPLIED FROM BATCH 2021	
COURSE CONTENTS Architecture and implementation of display interactive devices; Functional capabilities of graphics package. 2D and 3D viewing, clipping and transformation, human factors; Raster graphics scan conversion algorithms; Hidden surface and edges removal algorithms; Shading and texturing techniques; Application using commercial packages.			
COURSE LEARNING OUTCOME AND ITS MAPPING WITH PROGRAMME LEARNING OUTCOME			
Sr. No.	CLOs	Taxonomy level	Programme learning outcome (PLO)
At the end of the course, the student will be able to:			
1.	Comprehend the structure of modern computer graphics systems	C-1	PLO-2
2.	Understand the basic principles of implementing computer graphics fundamentals	C-2	PLO-3
3.	Implement key algorithms for modeling and rendering graphical data	C-3	PLO-5
REMARKS (if any):			

Recommended by: _____

Sulh 8-11-22

(Chairperson/Date)

Approved by: _____

NS 10.11.2022

(Dean/Date)

NED University of Engineering and Technology

Department CS&IT
Program BS (Computer Science)



F/QSP 11/17/01

Course Profile

COURSE CODE& TITLE CT-360 Visual Programming	SEMESTER ■ SPRING □ FALL	CREDIT HOURS TH ■3 □2 □1 □0 PR □3 □2 ■1 □0	
PREREQUISITE COURSE(S) - NIL -	DATE OF COURSE CONTENT APPROVAL 27/03/2019	APPLIED FROM BATCH 2021	
COURSE CONTENTS Introduction to Windows programming, Use of Windows API, MFC Class hierarchy, Class wizard, Application wizard and Application Studio, Graphics Device Interface, Menus, document view architecture, Multiple Views, files and archiving mechanisms, converting windows programmes to MFC, Sub-classing controls.			
COURSE LEARNING OUTCOME AND ITS MAPPING WITH PROGRAMME LEARNING OUTCOME			
Sr. No.	CLOs	Taxonomy level	Programme learning outcome (PLO)
At the end of the course, the student will be able to:			
1.	EXPLAIN basic problem solving steps and logic constructs.	C-2	PLO-2
2.	APPLY programming concepts.	C-3	PLO-3
3.	PRACTICE to implement solutions of real world problems	P-3	PLO-5
REMARKS (if any):			

Recommended by: _____

(Chairperson/Date)

Approved by: _____

(Dean/Date)

NED University of Engineering and Technology

Department CS&IT
Program BS (Computer Science)



F/QSP 11/17/01

Course Profile

COURSE CODE& TITLE CT-462 Distributed Computing	SEMESTER <input checked="" type="checkbox"/> SPRING <input type="checkbox"/> FALL	CREDIT HOURS TH <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> 0 PR <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 1 <input type="checkbox"/> 0	
PREREQUISITE COURSE(S) None	DATE OF COURSE CONTENT APPROVAL	APPLIED FROM BATCH 2021 onwards	
COURSE CONTENTS Advantages and disadvantages of Distributed Database (DDB); Database Security Issue; Design Approach of DDB; Internet Addressing, Low-level Communication using UDP; Connecting to Server using TCP; Connecting to an SMTP Mail Server; Connecting to an HTTP Web Server; WWW support via Class URL; Writing Server Programs using Server Socket.			
COURSE LEARNING OUTCOME AND ITS MAPPING WITH PROGRAMME LEARNING OUTCOME			
Sr. No.	CLOs	Taxonomy level	Programme learning outcome (PLO)
At the end of the course, the student will be able to:			
1	Understand the purpose and objectives of implementing distributed database and client server programming solutions.	C3	PLO-2
2	Apply appropriate technical knowledge to map diversified business architectures in the context of distributed database design.	C4	PLO-3
3	Implement distributed Architecture	P4	PLO-5
REMARKS (if any):			

Recommended by: _____

(Chairperson/Date)

Approved by: _____

(Dean/Date)

NED University of Engineering and Technology

Department CS&IT
Program BS (Computer Science)



F/QSP 11/17/01

Course Profile

COURSE CODE& TITLE CT-481 Wireless Networks & Mobile Computing	SEMESTER ■ SPRING □ FALL	CREDIT HOURS TH ■3 □2 □1 □0 PR □3 □2 ■1 □0																				
PREREQUISITE COURSE(S) -NIL-	DATE OF COURSE CONTENT APPROVAL 27/03/2019	APPLIED FROM BATCH 2021																				
COURSE CONTENTS Introducing the Data warehouse; The Data warehouse Methods; Quality Data warehouse process; Data warehouse Methodology; Data warehouse Administration; Performance Management, Managing the Data warehouse, Data warehouse Project Management; Data Handling: Distribution and Transformation; Data Integration and Data Semantics; Data Warehouse Architecture; Metadata, Types of Metadata, control change control in the Data warehouse.																						
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REMARKS (if any):																						

Recommended by: _____

(Chairperson/Date)

Approved by: _____

(Dean/Date)

NED University of Engineering and Technology

Department CS&IT
Program BS (Computer Science)



F/QSP 11/17/01

Course Profile

COURSE CODE& TITLE CT-484 Introduction to Cyber Security	SEMESTER <input type="checkbox"/> SPRING <input checked="" type="checkbox"/> FALL	CREDIT HOURS TH <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> 0 PR <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 0																				
PREREQUISITE COURSE(S) - NIL -	DATE OF COURSE CONTENT APPROVAL 27/03/2019	APPLIED FROM BATCH 2021																				
COURSE CONTENTS Basic security concepts, Information security terminology, Malware classifications, Types of malware. Server side web applications attacks. Cross-site scripting, SQL Injection, Network layer security. Cross-site request forgery. Planning and policy, Network protocols and service models. Transport layer security, Wireless security, Cloud & IoT security.																						
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REMARKS (if any):																						

Recommended by: _____

(Chairperson/Date)

Approved by: _____

(Dean/Date)